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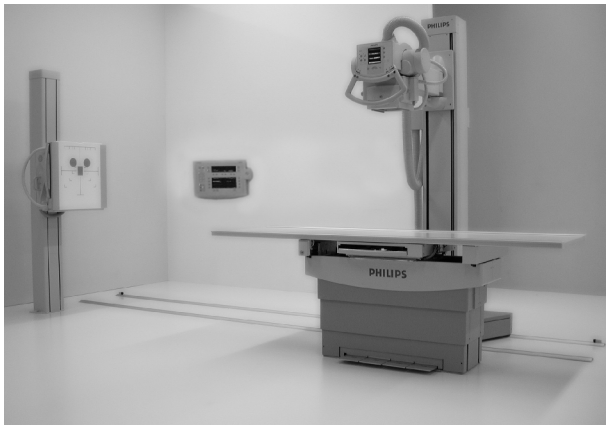
PHILIPS MEDICAL SYSTEMS

BuckyDiagnost Floor System

SYSTEM MANUAL INSTALLATION



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DMC Hamburg

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(04.2)

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Manual Order No. 4512 984 26861 REV AD
4512 983 07031

List of pages and modules (LOPAM)

4512 980 54001 Binder

Transparent plastic sheet

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SYSTEM MANUAL INSTALLATION

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Introduction

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3. Introduction 1-2
4. Quick reference 1-3
5. Help Desk X-ray 1-3

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1. Symbol description

WARNING

text of the warning

This symbol is the attention symbol to warn against danger of life.

CAUTION

text of the caution

This symbol is the attention symbol to warn against damage of the respective device.

NOTE

text of the note

This symbol is the attention symbol to emphasize important information.

2. Safety information

The general legal and factory safety recommendations for this X-ray equipment and the following recommendations must be strictly observed!
Start of installation, operation and maintenance work and especially electrical work must only be executed by trained and authorized persons. This equipment must only be serviced by properly educated service specialists who have received general and system-specific training as performed by Philips Medical Systems.

WARNING

Any X-ray unit procedures ionizing radiation which may be harmful if not properly controlled. Therefore, it is recommended that this equipment be operated in accordance with guidelines set down by the national council on radiation protection.

Installation of equipment must comply with all local regulations.

Connect the mains to the generator as late as possible, as indicated in the system manual installation.

Install and adjust first the mains adaptation transformer.

3. Introduction

This manual is intended as a guideline for installing pre-assembled systems. Carry out these instructions in the sequence specified in this manual.

For trouble shooting or for more detailed information refer to the specific product documentation also delivered with this system.

All necessary adjustments and program settings have already been performed at the factory. Only the adaptation of the system to local requirements still has to be carried out.

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4. Quick reference

Item	Where to find	
– Introduction – Tools – Room check	**Section 1**	contains a list of tools and a Room check. This is a drawing with the most important planning checks of your installation.
– Unpack – Transport – Mount	**Section 2**	contains information for transport, unpacking and installation of ”major parts”.
– Installation	**Section 3**	contains installation instructions for: – finishing mechanical installation – connecting cables – hardware programmings for local adaptation.
– Setting –to–work	**Section 4**	contains instructions from switching-on to the handing over of the system.
– Performance checks	**Section 5**	contains data of all measurements done by the factory. Use this section as a reference for checks in section 4.
– Handover preparation	**Section 6**	contains information for handing over the system.
– Options	**Section 7**	contians all necessary options.
–	**Section 8**	
–	**Section 9**	
–	**Section 10**	
–	**Section 11**	

5. Help Desk X-ray

	Hamburg **Germany**	**Best** **The Netherlands**
☎	+49-40-5078 2369	+31-40-2764777
Fax	+49-40-5078 2348	+31-40-2762628
✉	PK 140 Röntgenstraße 24 22335 Hamburg Germany	P.O. Box 10 000 Building QG-150 5680 DA Best The Netherlands

The Helpdesk can be contacted for:

- Planning
- Installation
- Planned maintenance
- Corrective maintenance
- FPR
- etc.

■

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1-1 (03.0)

Tools

1. Tools required

Items:

1	4522 980 38262	TC 129 Standard set of tool
1		Power tools
1	4512 000 4063x	Installation tool for inserting BuckyDiagnost Standard, Compact into the rails
1		Measuring tape ≥10 m
1		Ruler 3m
1		Loctite blue
1		Spirit level
1	4512 982 0104x	Templates for BuckyDiagnost TH/TH2/TF
1	4512 982 0097x	Template for BuckyDiagnost VE/VT,VE2/VT2 stand-alone or wall-mounted version
1	4512 982 0025x	Template for basement of the power box
1	4512 982 0138x	Template for BuckyDiagnost FS fix
1		Spring balance < 250 N
1		Mirror (about 30 x 40 cm)
1		Dose-meter (e.g. Dali or PMX III)
1		Density meter
1		Multimeter
1		Mains resistance measuring instrument
1		ESD antistatic kit
1	2422 487 89772	Chip-ejector for service
		25 mm aluminium for AMPLIMAT adjustment
1		Service PC
1		PC program X-Scope Rel. 1.4.2 or higher
1		Hardware key
1	4512 130 56931	Serial interface cable for program X-Scope or can also be used for:
1		XRG-Scope cable for generator software up to 3.1 or
1		Data cable for COLRA (automatic collimator galileo version ≥ 614/615/616) for service
1		Sub-D adapter kit (9- / 15- / 25-pole)
1	8112 108 57929	Tomo phantom*
		Torx tool set complete / specially for NICOL collimator & ceiling rails detents (supply it locally)

* needed only if tomo is installed

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List of Pages and Modules Module codenumber: 4512-983-06951

1-1... 1-3 (04.0)

Room preparation

Room Preparation

1. Dimension of Boxes

1.1. BuckyDiagnost TH2/TF

	Length (mm)	Width (mm)	Height (mm)	Gross weight (kg)	Net weight (kg)
Basic unit	1350	950	1000	262	216
Table top	2550	900	200	50	40

1.2. BuckyDiagnost FS

1.2.1. BuckyDiagnost FS Standard

	Length (mm)	Width (mm)	Height (mm)	Gross weight (kg)	Net weight (kg)
	2800	960	1720	650	350 max.

1.2.2. BuckyDiagnost FS Compact

	Length (mm)	Width (mm)	Height (mm)	Gross weight (kg)	Net weight (kg)
	2800	960	1720	520	330 max.

1.2.3. BuckyDiagnost FS Fix

	Length (mm)	Width (mm)	Height (mm)	Gross weight (kg)	Net weight (kg)
	2800	960	1720	520	310 max.

1.3. OPTIMUS 50

	Length (mm)	Width (mm)	Height (mm)	Gross weight (kg)	Net weight (kg)
Cabinet	2120	720	860	220	180
Generator	760	670	780	93	72

1.4. OPTIMUS 80

	Length (mm)	Width (mm)	Height (mm)	Gross weight (kg)	Net weight (kg)
Cabinet	2120	720	860	220	180
Generator	760	670	780	93	72

1.5. BuckyDiagnost VE/VT

	Length (mm)	Width (mm)	Height (mm)	Gross weight (kg)	Net weight (kg)
VE / VE 2	2380	780	860	320	240
VT / VT 2	2380	780	860	320	240

1.6. Accessories

	Length (mm)	Width (mm)	Height (mm)	Gross weight (kg)	Net weight (kg)
Accessories	920	620	780	60	47

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2. Check List

Check if the preparation has been done correctly before delivery of the system.

Pre check	YES	NO
Free ways for delivery, check dimension of doors	☐	☐
Delivery note is in accordance with the questionaire	☐	☐

Mechanical works	YES	NO
Rails installed and aligned	☐	☐
Extension rails (option order) installed and aligned	☐	☐
Fixing holes for the BuckyDiagnost TH / TH 2	☐	☐
Fixing holes for the BuckyDiagnost VE / VT, VE 2 / VT 2	☐	☐

Electrical works	YES	NO
Mains installed	☐	☐
Cable ducts mounted	☐	☐

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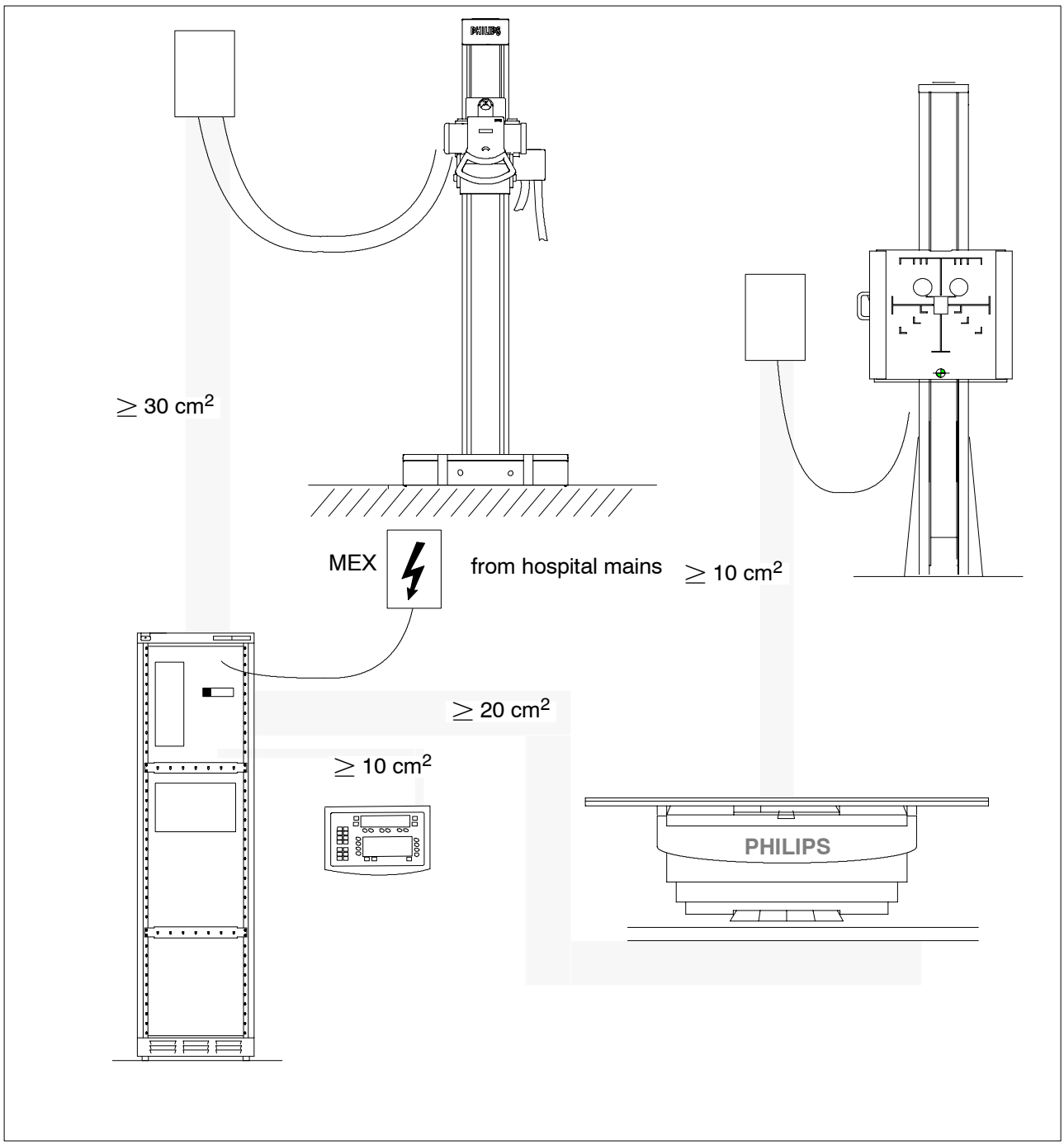
3. Dimension of Cable Ducts

The following different cable duct sizes are necessary:



The exact dimensions depend on locality.
Refer to PRD 'Room layout planning'

■

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1-1 (04.0)

Z-4 (03.1) 4512 982 0104.

Template for BuckyDiagnost table

Contents

BuckyDiagnost TH / TH 2, DigitalDiagnost TH Template for bucky table Z-4

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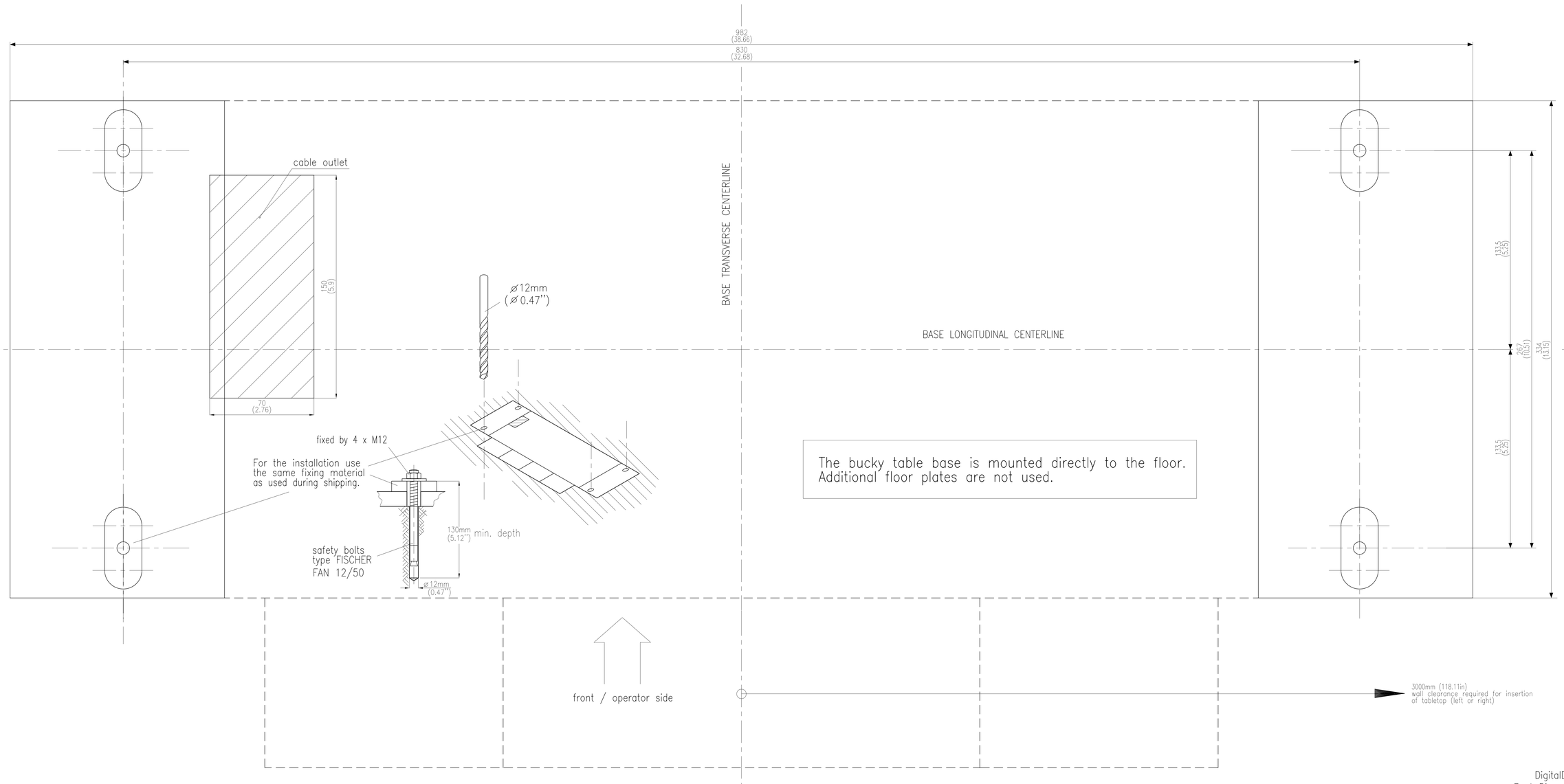

The bucky table base is mounted directly to the floor.
Additional floor plates are not used.

All dimensions in millimeters (inches)

0 50 100
mm

DigitalDiagnost TH
BuckyDiagnost TH2/TF
Template

Z-4

Product Planning Data

A0 03-09-24 Ost.
4512982001041_a4.031

4512 982 0104.
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(03.1)

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Z-4.2	(02.0)	4512 982 0025.
Z-4.3	(04.0)	4512 982 0072.

Templates BuckyDiagnost wall stand

Contents

BuckyDiagnost VE / VT, VE2 / VT2	Template for wall mounted version	Z-4.1
BuckyDiagnost VR	Template segment control unit	Z-4.2
BuckyDiagnost VE / VT, VE2 / VT2	Template for stand-alone version	Z-4.3

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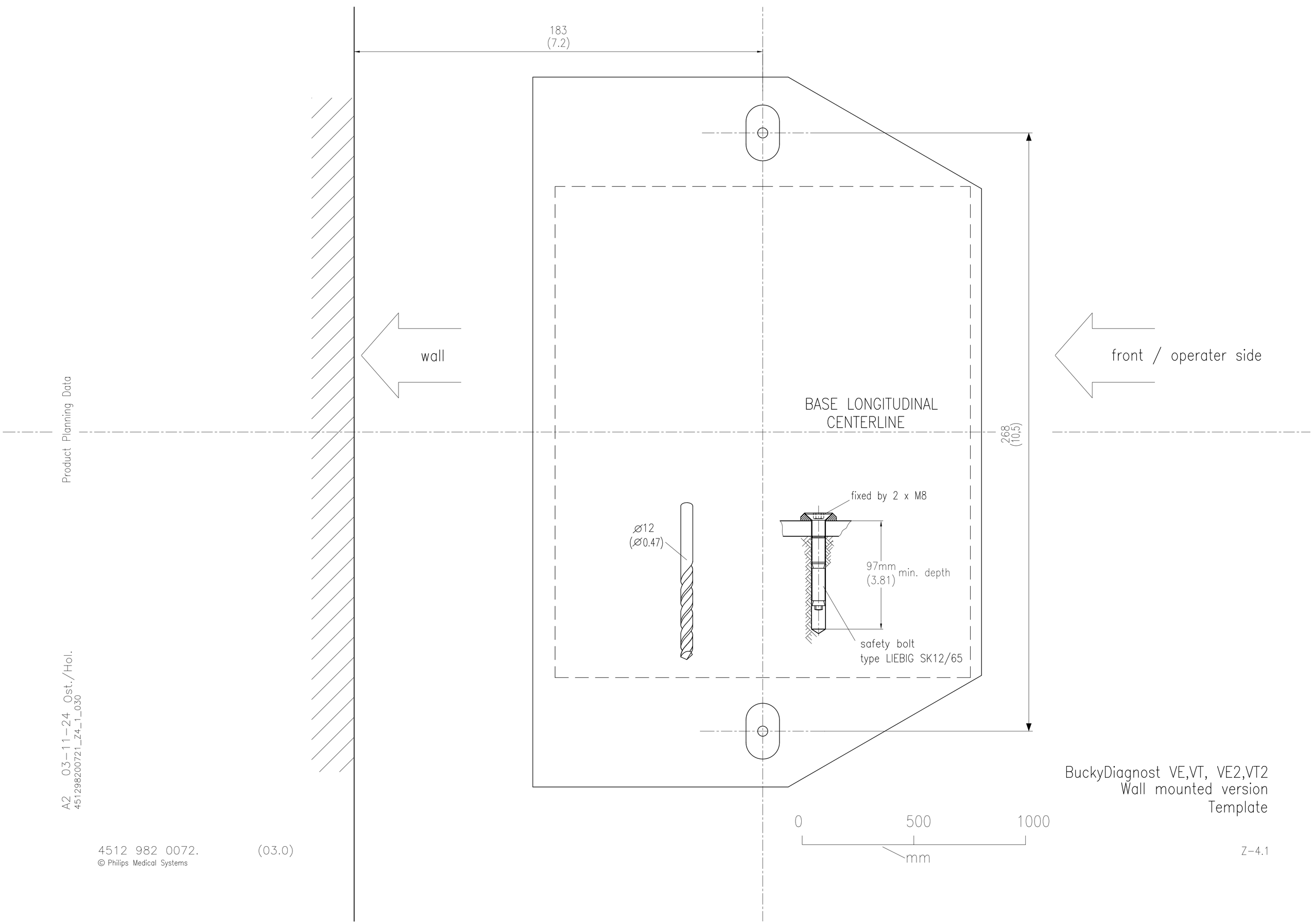

BuckyDiagnost VE,VT, VE2,VT2
Wall mounted version
Template

Z-4.1

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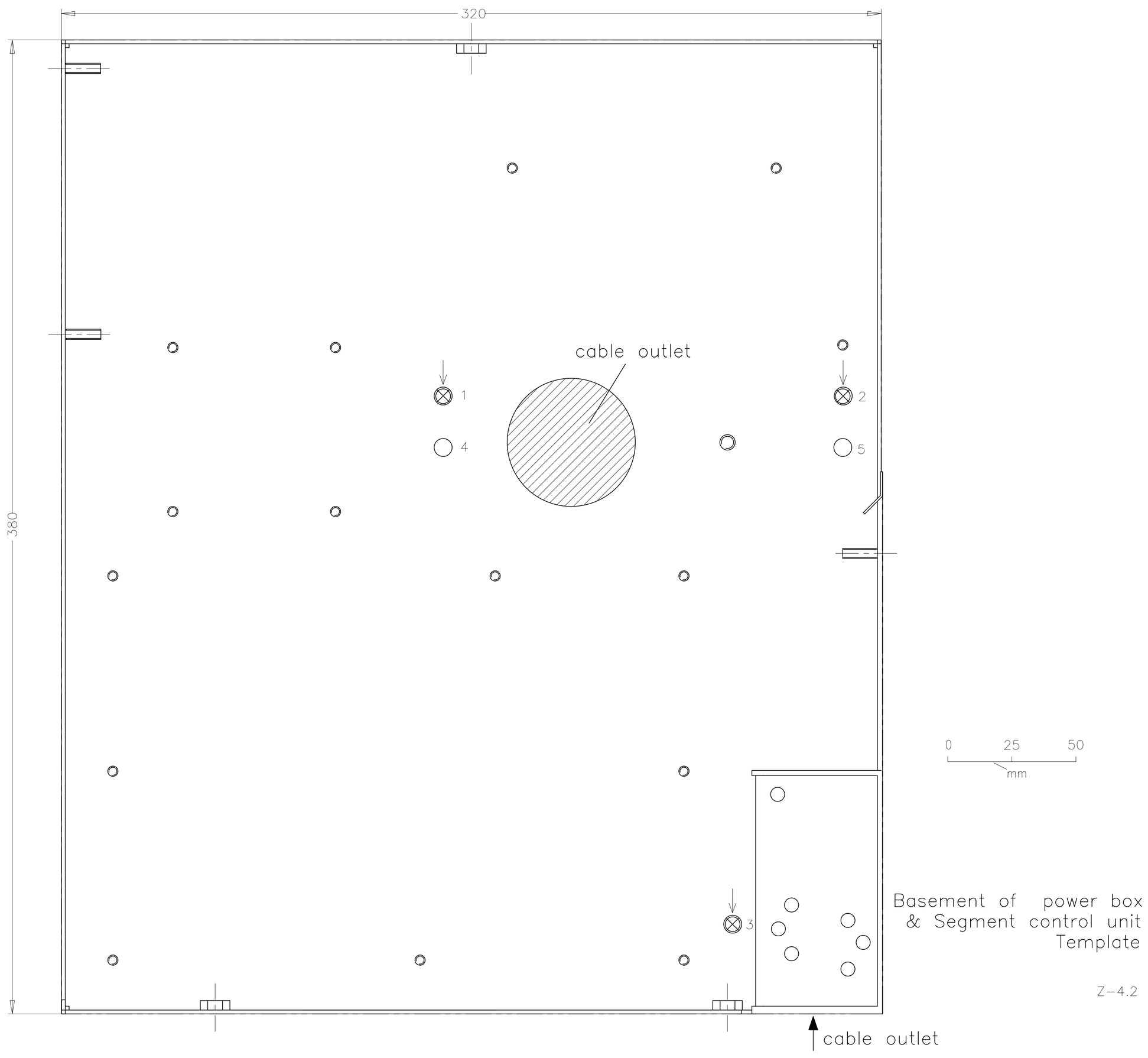

1/2/3 Fixation holes

4/5 Optional fixation holes

A2 02-06-14 Schr./Ost.
4512982002 51_z4_2_020

4512 982 0025. (02.0)

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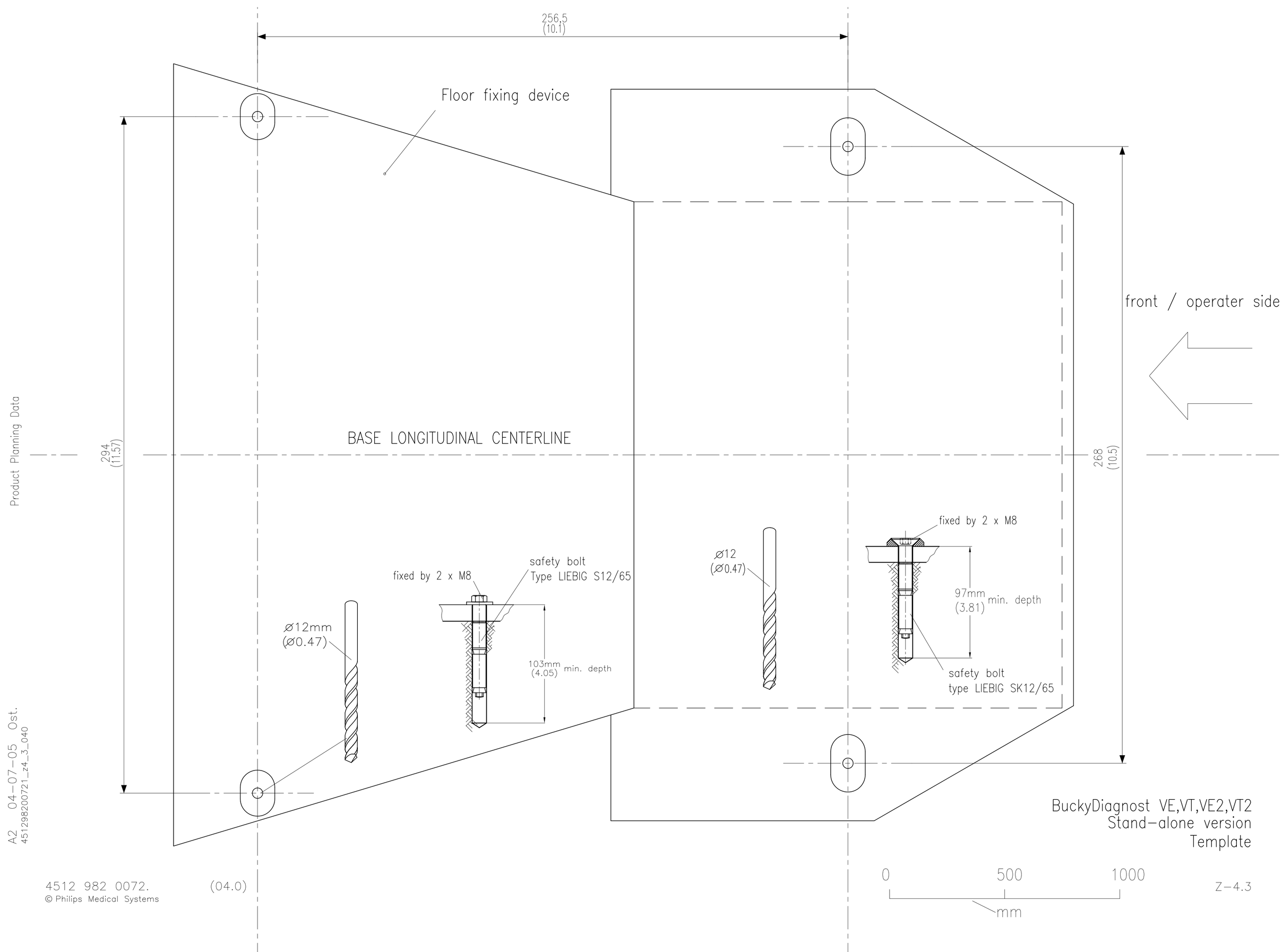
Basement of power box & Segment control unit Template

Z-4.2



Product Planning Data

A2 04-07-05 Ost.
451298200721_z4_3_040

BuckyDiagnost VE,VT,VE2,VT2
Stand-alone version
Template

0 500 1000
mm

Z-4.3

4512 982 0072. (04.0)

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1-1 (03.1)

Z-4 (03.1) A1 4512 982 0138.

Template for BuckyDiagnost FS Fix

Contents

BuckyDiagnost FS Fix Column Template Z-4

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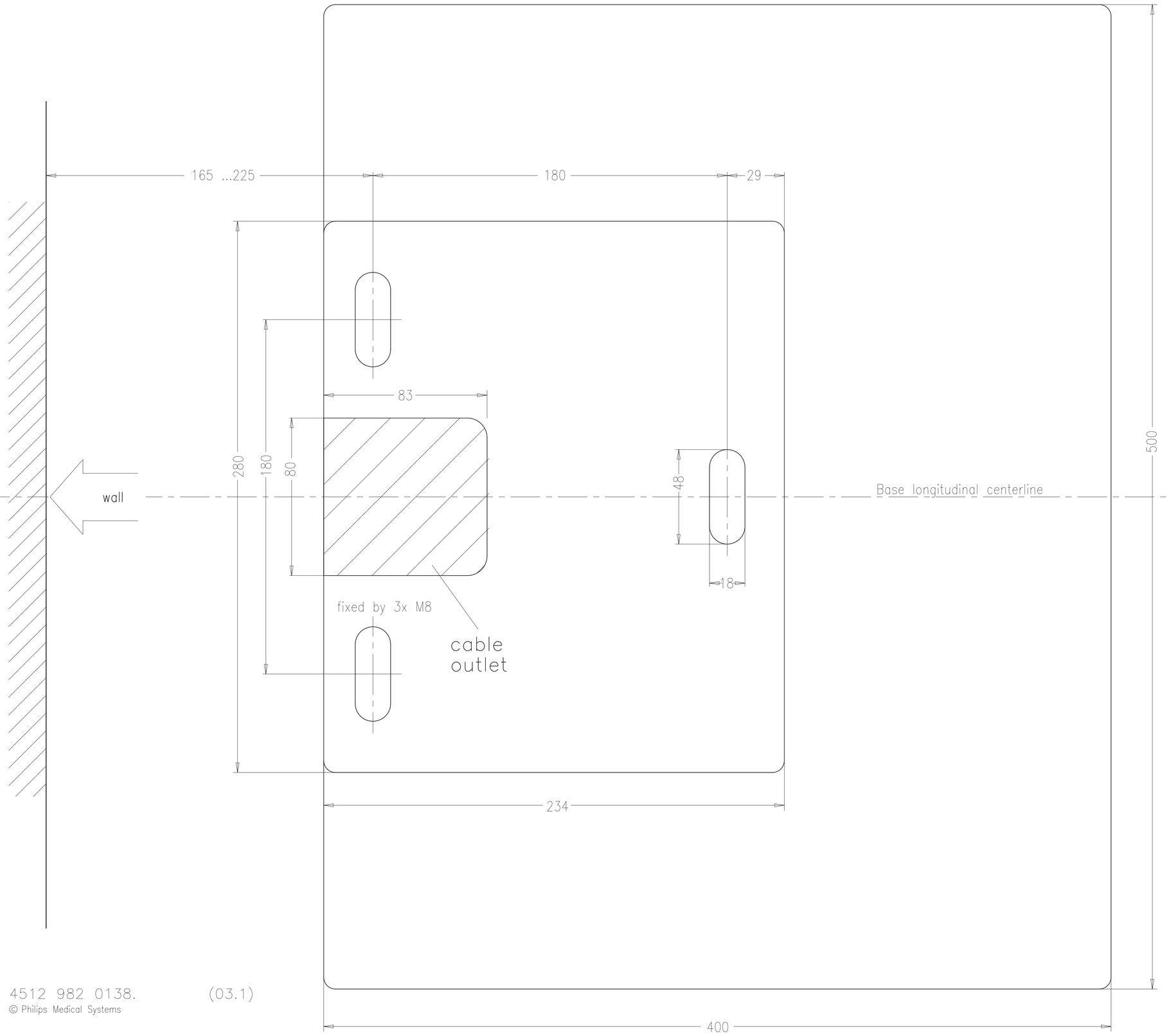
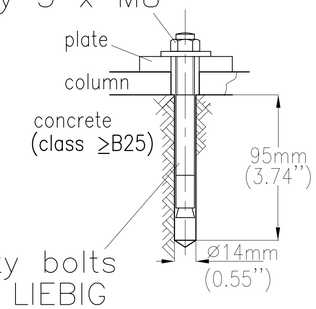
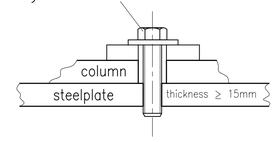


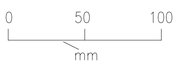
concrete
fixed by 3 x M8



safety bolts
type LIEBIG
superplus BLS 14/80/30

steelplate
fixed by 3 x M8x50mm





BuckyDiagnost FS Fix Column Template

Z–4

A1 03–09–11 Ost.
4512982013 81_z4_031

4512 982 0138. (03.1)

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2-1 ...2-3 (03.0)

Unpacking BuckyDiagnost FS

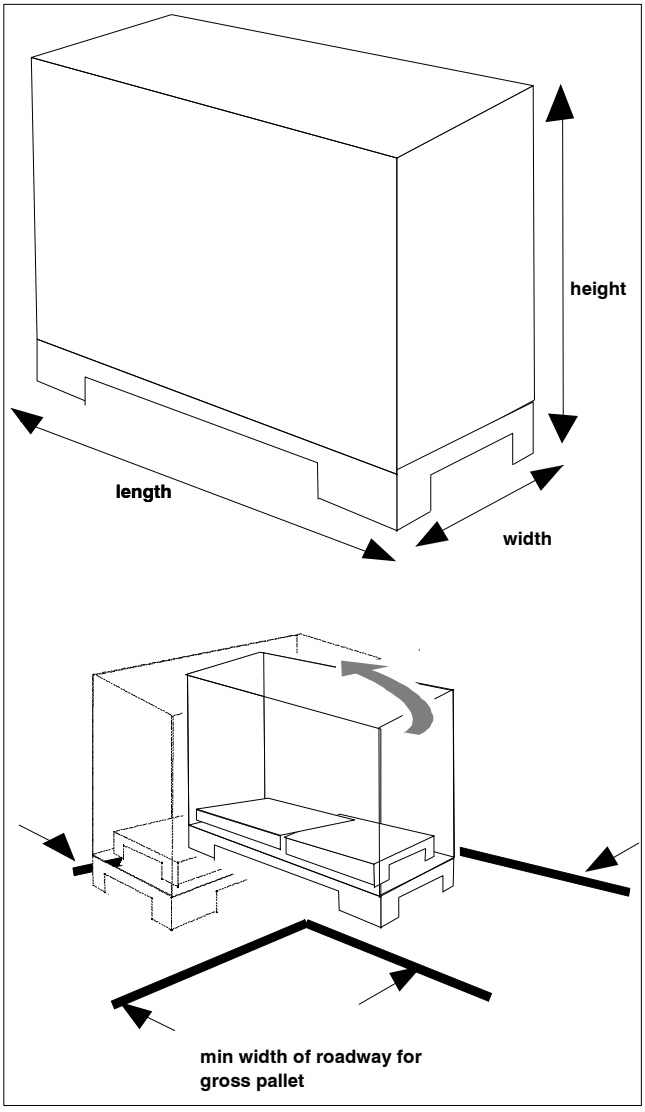
1. Unpack, transport

1.1. Box dimensions

Crate / Box FS Standard	**Dimension [mm]**			**Weight [kg]**
	Length/ Depth	Width	Height	
Packed	2800	960	1720	650
Installed	1370... 1520	1000	2411	350 max.

Crate / Box FS Compact	**Dimension [mm]**			**Weight [kg]**
	Length/ Depth	Width	Height	
Packed	2800	960	1720	520
Installed	1130	1000	2390	330 max.

Crate / Box FS Fix	**Dimension [mm]**			**Weight [kg]**
	Length/ Depth	Width	Height	
Packed	2800	960	1720	520
Installed	789... 1552	642	2386	310 max.



1.2. Roadway

Minimum roadway width for crossing box while moving is defined in PRD 'Product planning data' 'Mechanical data'.

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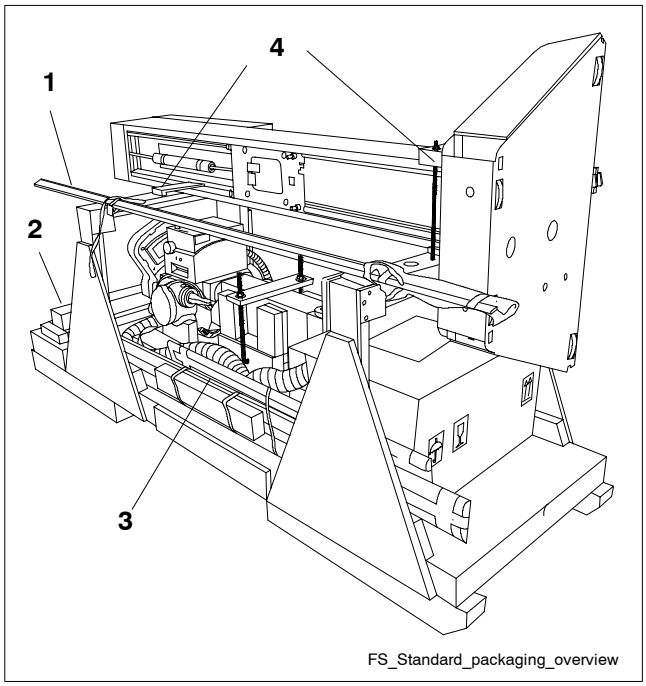
1.3. Unpacking

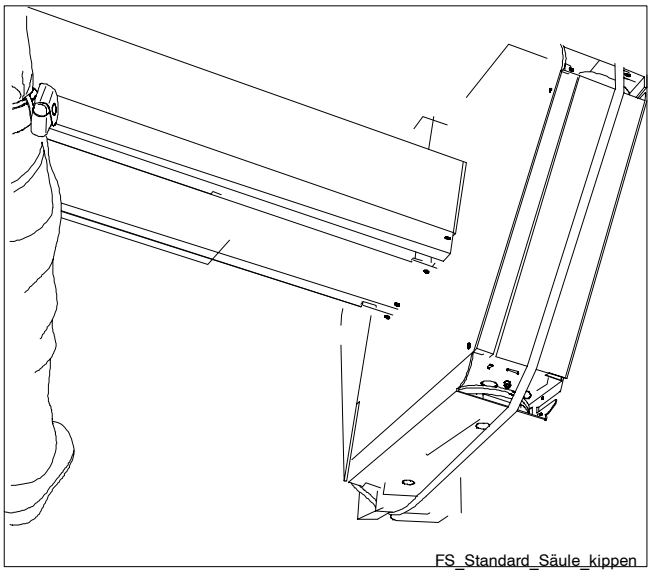
The following procedure should be done by four persons.

FS Standard

- Dismantle the box and remove the foil.
- Remove the rails **(1)** from the pallet.
- Remove the counterweights **(2)**.
- Remove the set of covers and the rail distance tool **(3)**.
- Remove the transport locking **(4)**.



- Pull the column at its bottom and tilt it over the edge of the transport pallet.
- Lift up the column.



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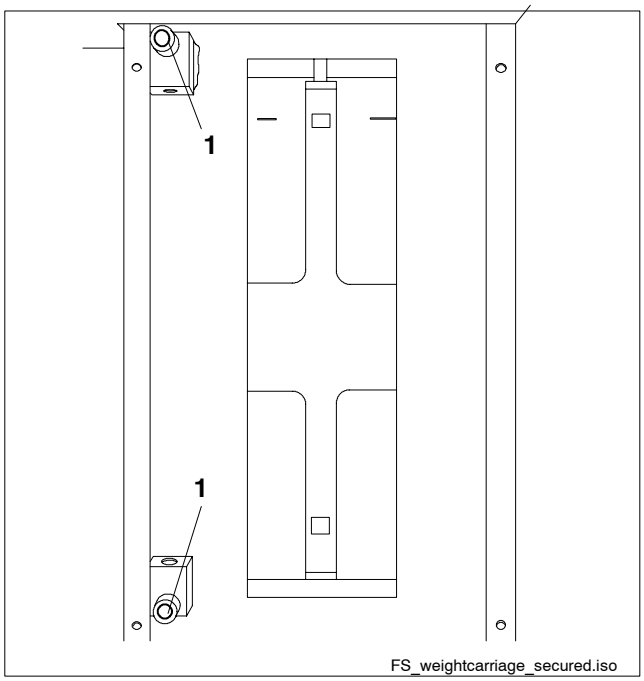
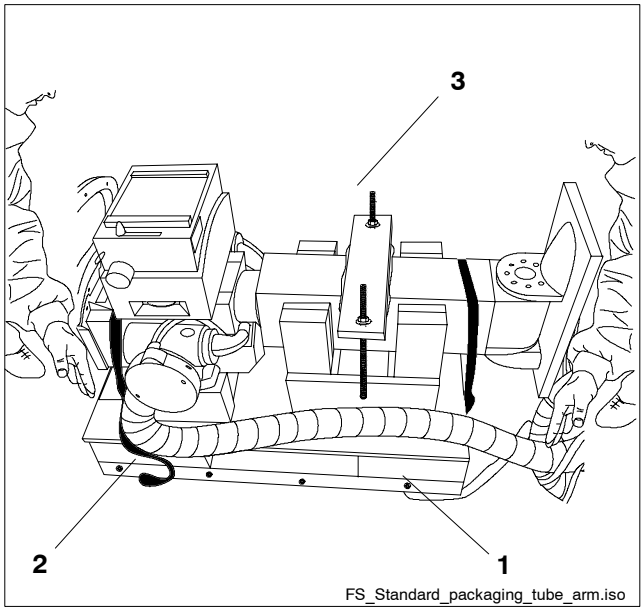
WARNING

The counterweight carriage must be left secured with screws (1) until counterweights and tube arm are completely installed!



- Remove the screws **(1)** (8x).
- Remove the tube assembly pallet and box with cables. Use the straps **(2)**.
- Remove the transport locking **(3)**.



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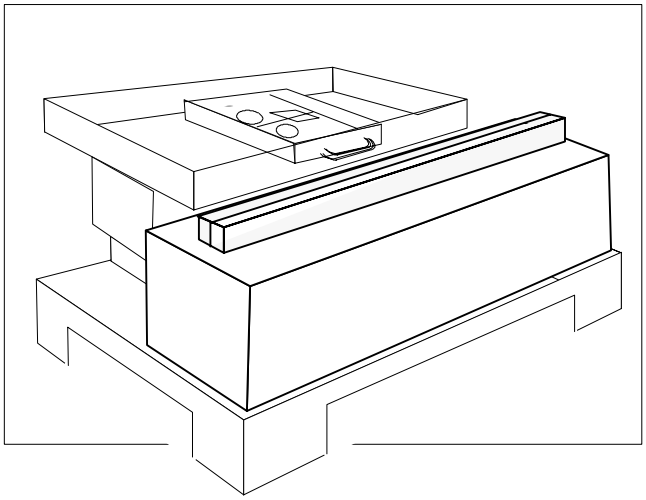
LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-03251

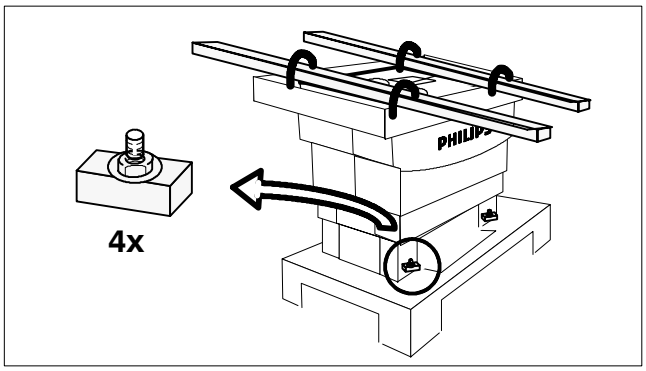
2-1...2-2 (04.0)

Unpacking BuckyDiagnost TH2 / TF

1. Removing the unit from the pallet



- Remove the boxes and the wooden bars from the pallet. The boxes include the table covers.

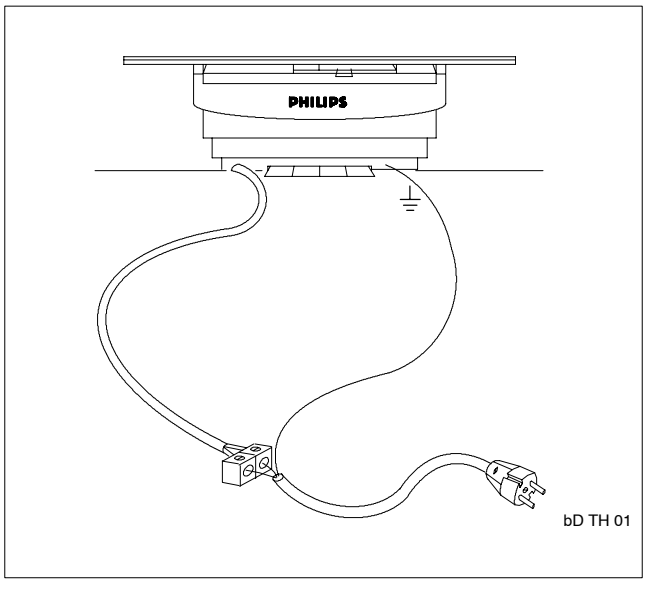


- Loosen the nuts **4x** of the screwings at the front and rear side.
  - Remove the nuts.
  - Remove the washers.
  - Remove the fixing blocks.
- Insert the wooden bars into the loops.
- With four persons lift up the table base and remove it from the pallet.
- Place the table at the installation position, do not demage the anchor dowels.

NOTE

Dowels are not included in the accessory kit.

Supply it locally.



- For moving up the table in a better working position connect cable **MEX** from table to the mains of 230 VAC. Connect protection lead too.
- To move up the table press foot switch
- To move down the table press foot switch

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WARNING

If the table does not move down press on table top with 20 kp.
Do not adjust the collision switch!
The table stops automatically at the middle position.

- Disconnect **MEX** from mains.

■

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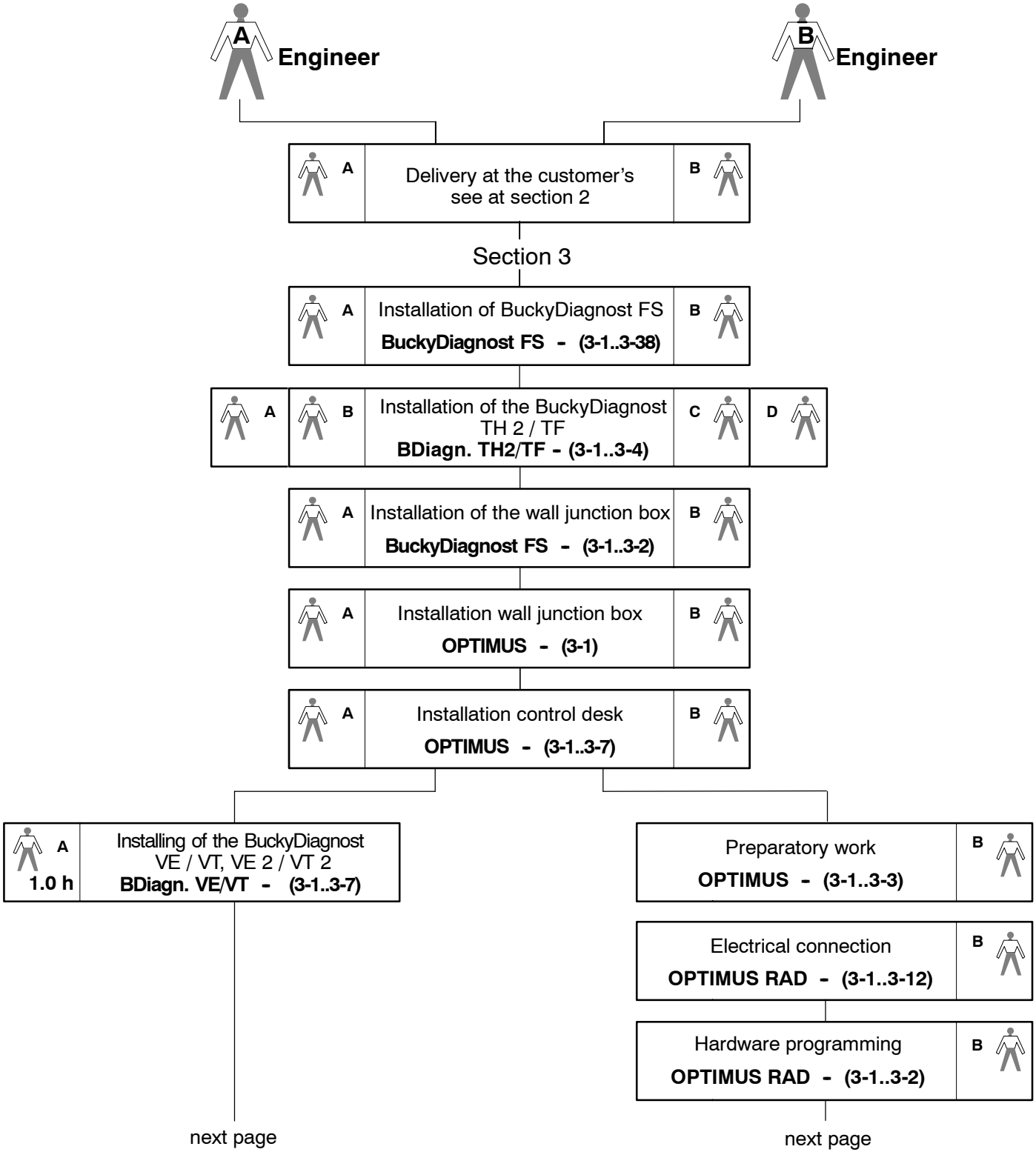
Sequence of installation



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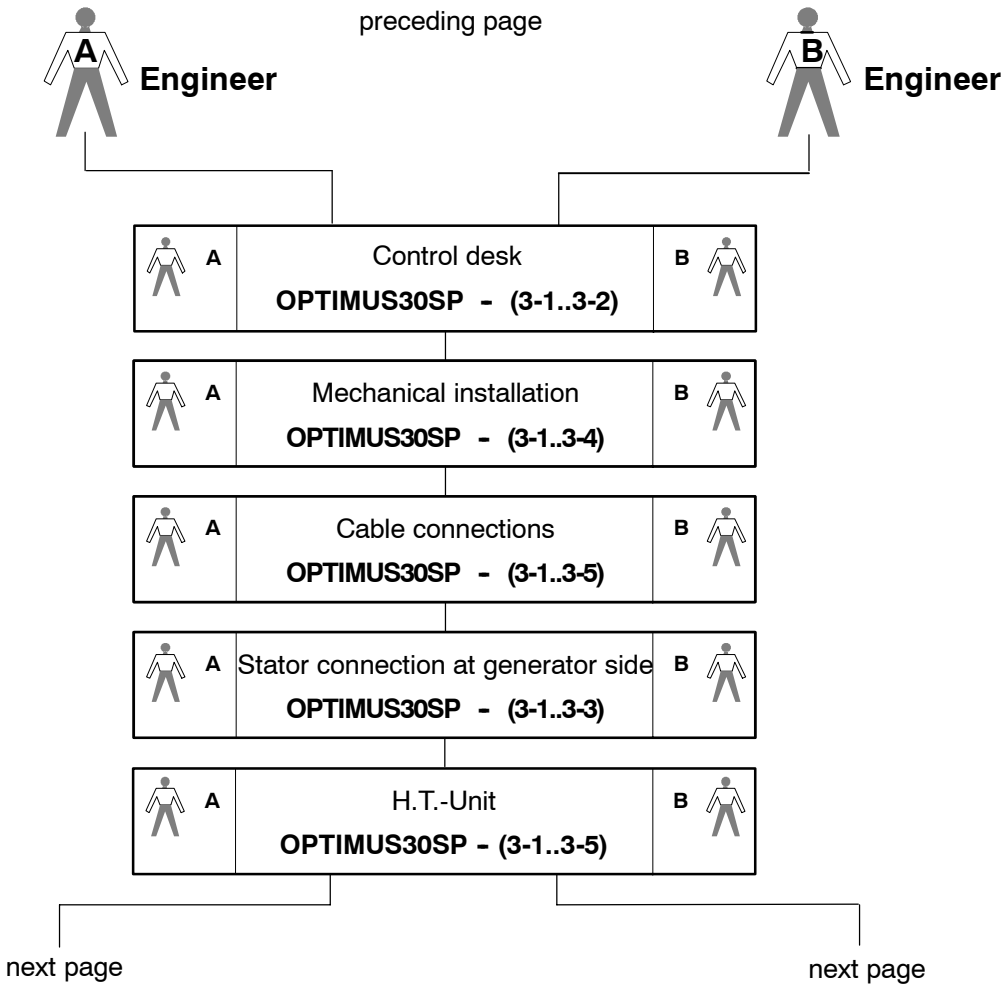

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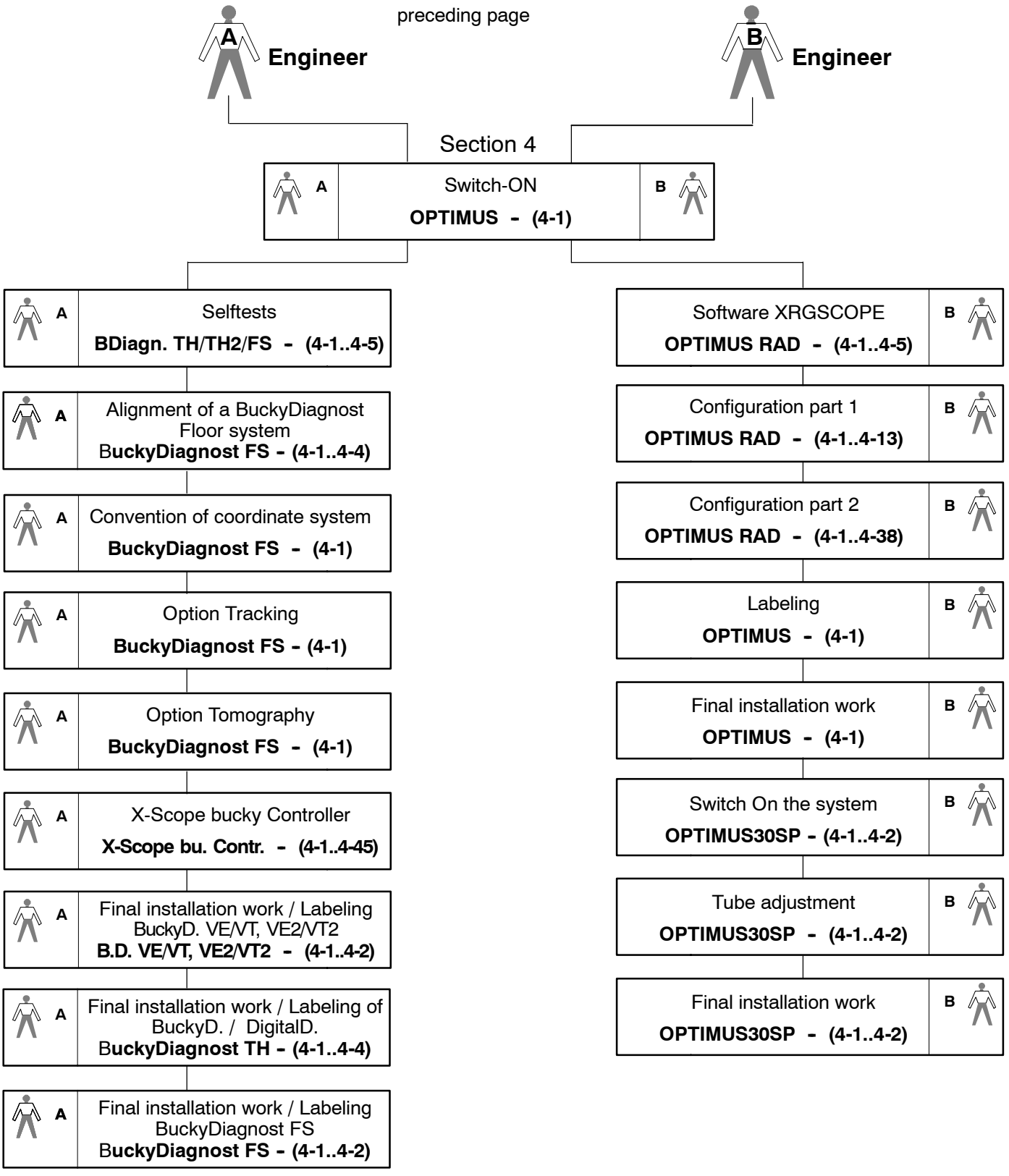

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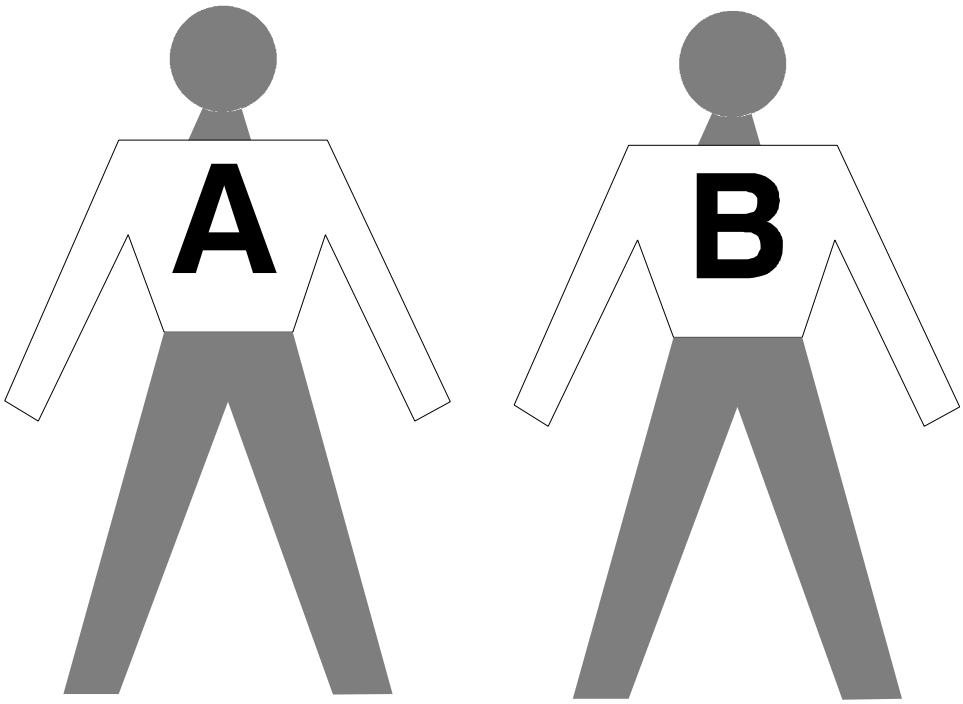
A
B

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Z1-1	(03.2)	A3	4512 983 07591
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Z1-1.2	(03.0)	A3	4512 983 07931

Installation of BuckyDiagnost FS

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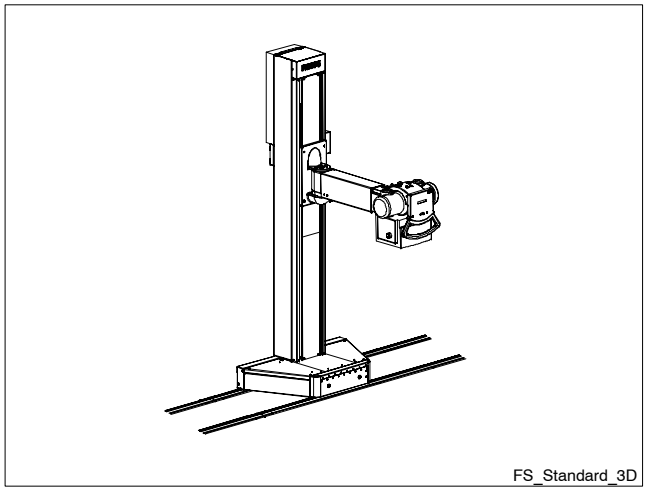
1. Installation of FS Standard



1.1. Installation of the floor rails

NOTE

Before starting the installation of the rails, check the local planning room drawing and PRD for rail layout.

Distance between the rails: 500 mm

The rails are delivered in a set with two different lengths (1370, 2550 mm). The long rail is always used at the table side.

1.1.1. Accuracy requirements

WARNING

For a good performance of the system it is important to align the front and back rail very precisely!

Floor level accuracy requirements:

In the area of the rail installation the floor has to be leveled within 2.0 mm

Rail level accuracy requirements:

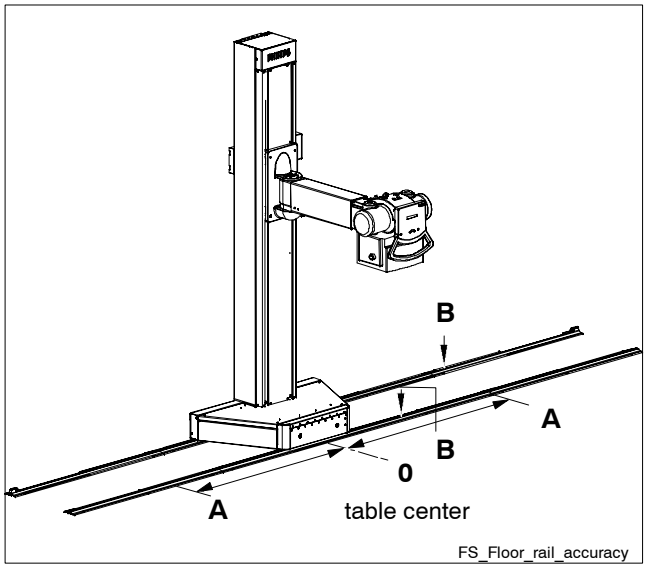
A = distance between table center and right/left side

B = tolerance for parallelism and eveness of the two floor rails.

Non tomo systems: A = 1000 mm
B = less or equal 1.0 mm

Tomo systems: A = 1200 mm
B = less or equal 0.5 mm

In the remaining area the floor has to be leveled within 2.0 mm.



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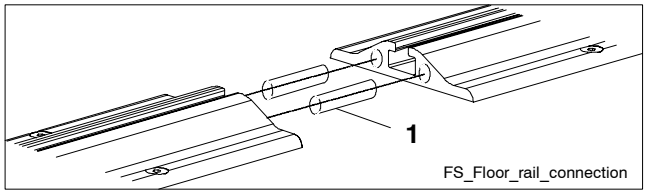
1.1.2. Preparation of the floor rails



- Insert the pins **(1)** into the holes in the rail and connect the rails.

1.2. Mounting of the rails

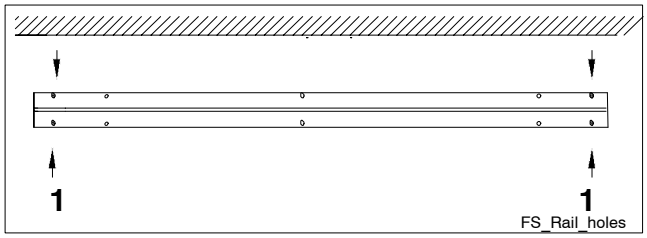
⚠ WARNING

Use adequate fixing material depending on the ground. Fixing material has to be supplied locally!

1.2.1. Mounting of the first rail

NOTE

To ensure that the drill holes fit, only the following described procedure has to be done!

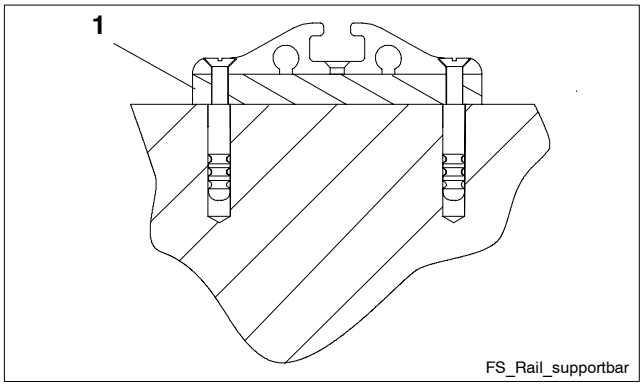


- Determine and mark the drilling holes **(1)**.
  - Use the outer rail holes as drilling template for the first (back) rail.
- Drill the outer holes depending on the fixing material.
- Place the dowels and fix the rail.
- Use all other holes in rail as drilling template.
- First drill max. 5 mm holes in order not to damage the rail.
- Remove the rail.
- Drill the holes to final dimensions depending on the fixing material.
- Place the dowels and fix the rail.

Additional rail support bar for option tomography:

Use the delivered support bar for systems with option tomography.

- Place the support bar **(1)** between rail and floor to achieve better stability.



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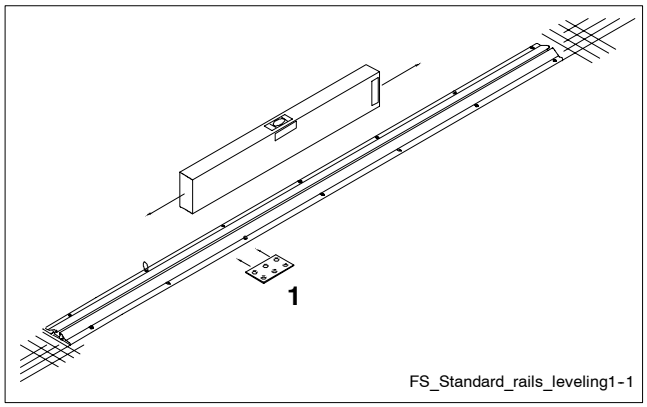
1.2.2. Height alignment of the first rail

NOTE

In case of an uneven floor, linings have to be used to achieve the required height accuracy!

The linings **(1)** are delivered in different thicknesses!

- Loosen the rail and position the balance plate between floor and rail.
- Use the spirit level to check the alignment.

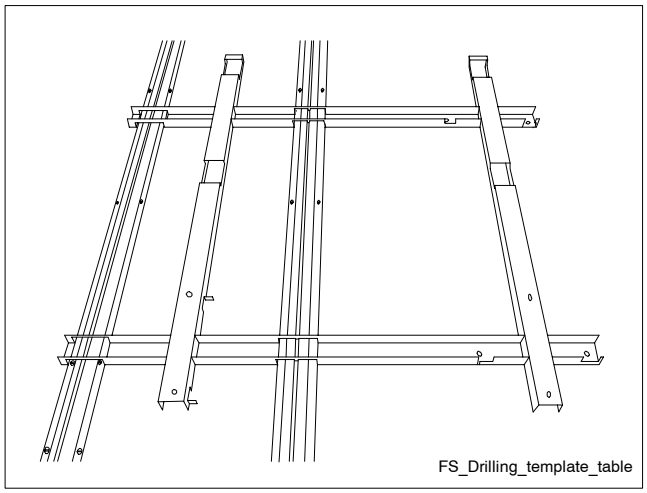


1.2.3. Mounting of the second rail

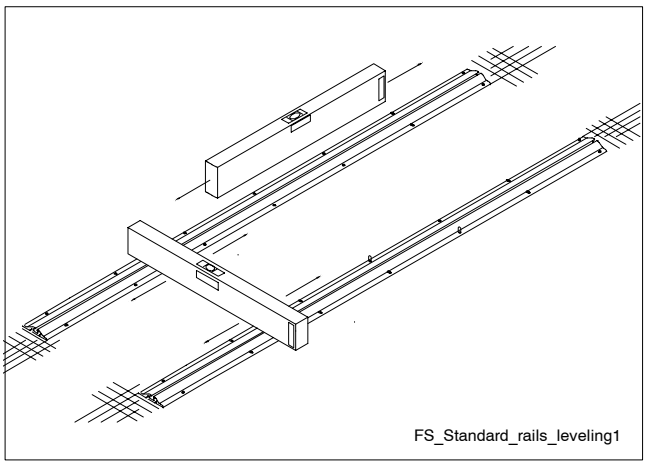
Note

The second rail can be aligned using the delivered rail distance tool. The tool can also be used as template for the fixing points of the table.

- Place the second rail at the corresponding position.
- Connect the four parts of the tool and place it on the rails according to the figure.



- Use the spirit level to check the alignment.
- Follow the same procedure for fixing and aligning the second rail as described for the first rail.



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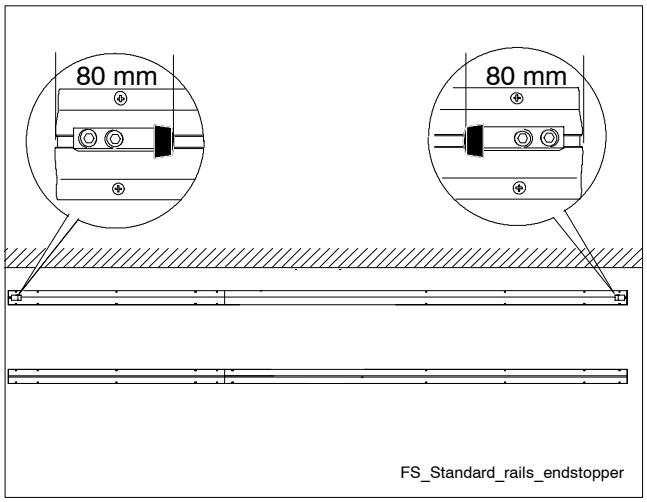
- Mount left and right end stoppers according to figure.



Option tomography:

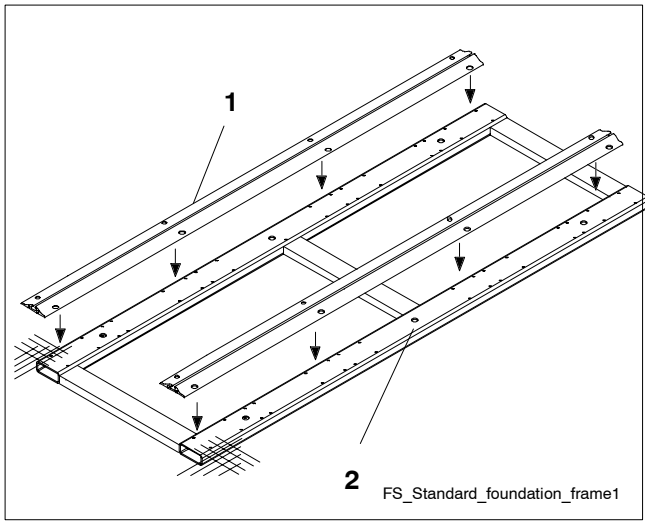
For the installation of the tomo rail refer to chapter 11. 'Option tomography'

1.3. Mounting of the rails on foundation frame (optional)

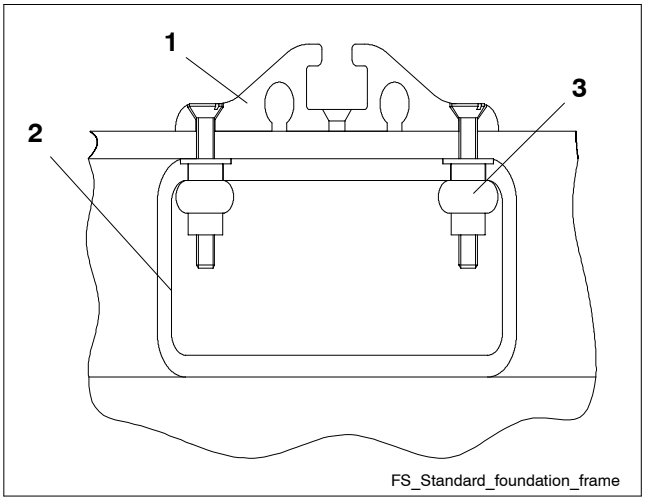
NOTE

The foundation frame (2) consists of a stable tube construction. After proper installation into the floor it guarantees a leveled underground for the installation of the floor rails. For further information refer to the local planning data and PRD.

The rails **(1)** are mounted on the top of the foundation frame **(2)**.



- Mount the connected rails **(1)** at the pre-installed foundation frame **(2)**.
- Insert the delivered connecting nuts **(3**) into the corresponding rail fixation holes.



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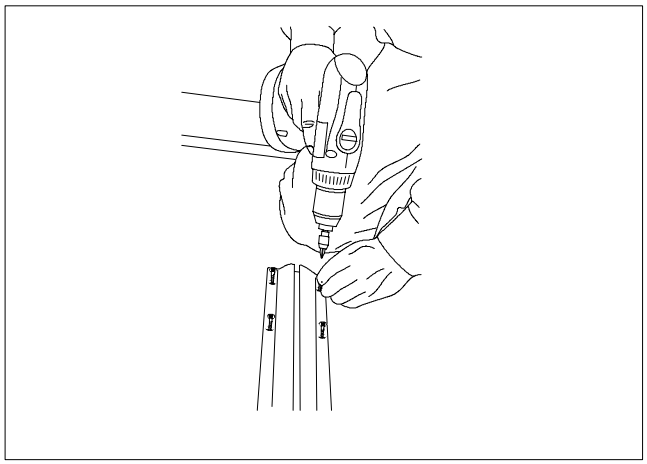
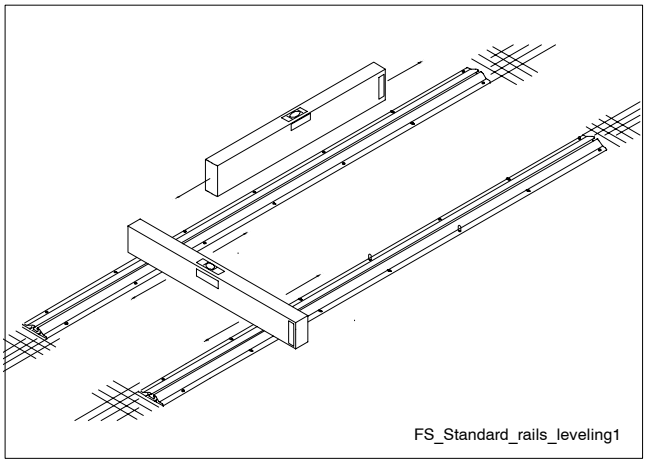
- Fix the rails with the screws.



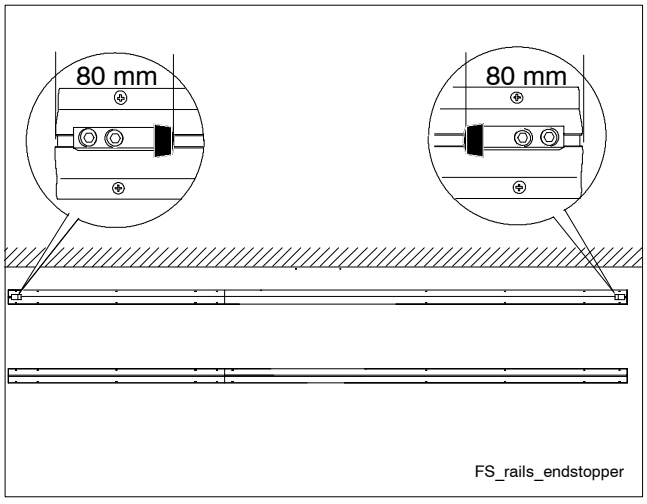
- Use the spirit level to check the accuracy of the rail installation.

NOTE

If the required accuracy for leveling is not achieved, floor linings with different thicknesses can be used for compensation.



- Mount left and right end stoppers according to the figure.



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1.4. Insertion of the column into the rails

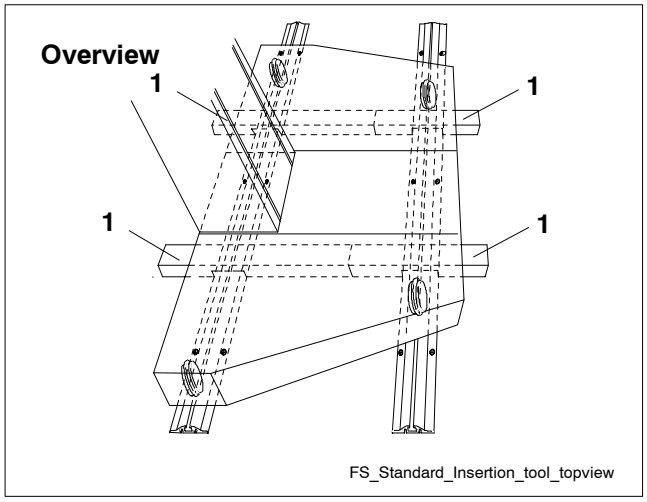
The following procedure should be done by at least two persons!

WARNING

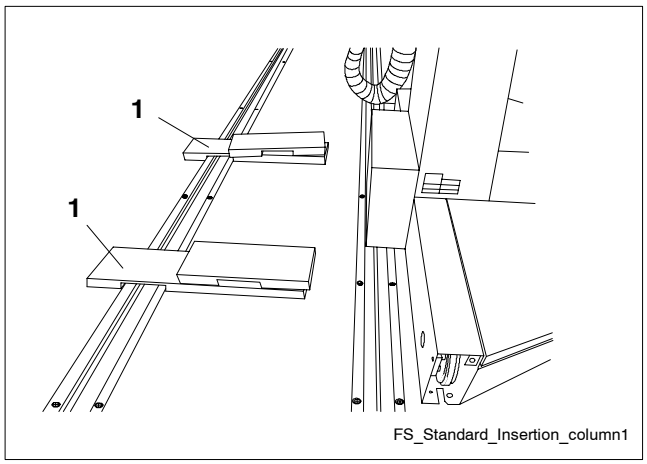
The column has to be inserted into the rails carefully in order not to damage the rollers. Clean the rails before inserting the column!

- Place the column insertion tool consisting of four wooden panels on the rails as shown in the figure.

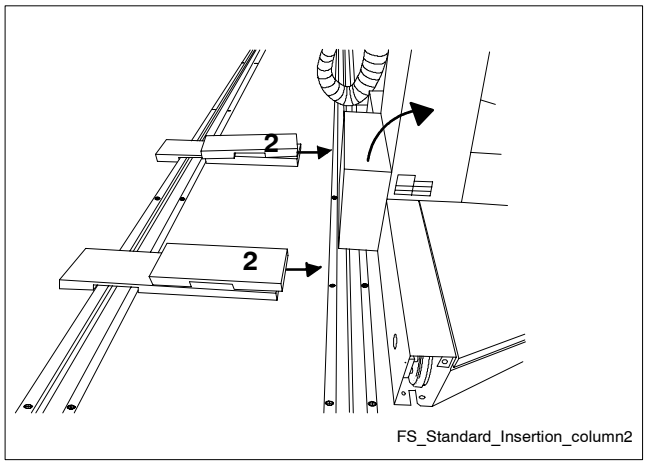
As result of the following procedure the column should be positioned on the tool as seen in the figure.



- Place the column parallel, in front of the rails.
- Position the long tool **(1)** on the back rail.



- Tilt the column to the front and position the short tool **(2)** on the front rail by sliding it under the column base.



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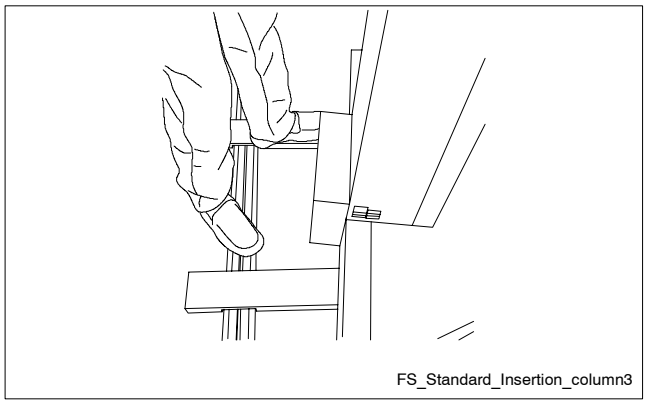
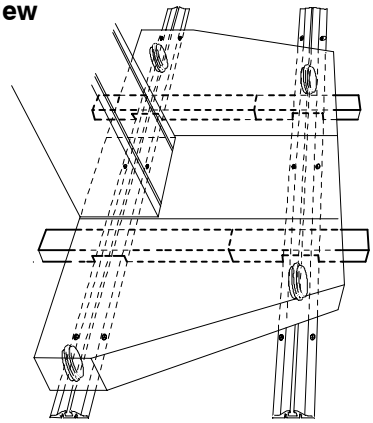
- Position the column on the tool and move the column, so that all rollers are aligned parallel to their end position above the rails.



FS_Standard_Insertion_column3

- Check the position of the column.

Overview

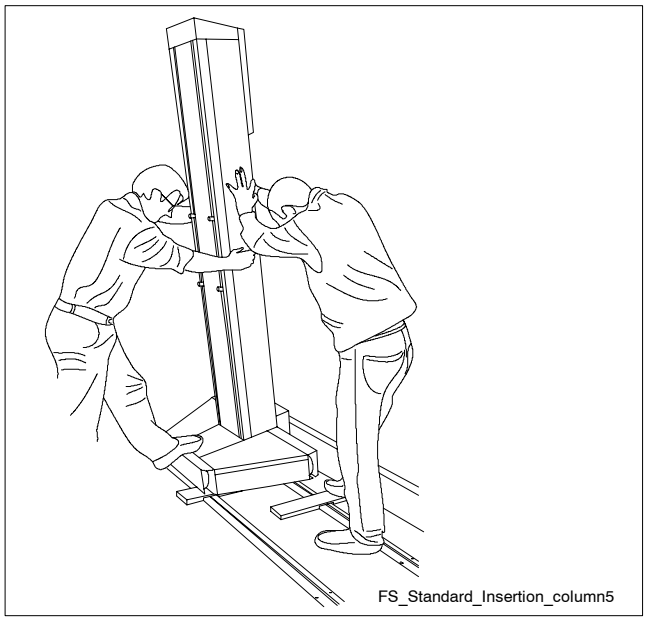


FS_Standard_Insertion_tool_topview

- Tilt the column base to the front and remove the back tools.

WARNING

Let the column base down carefully while positioning the rollers into the rails. Do not damage the rollers!



FS_Standard_Insertion_column5

- Tilt the column base to the front and remove the front tools.

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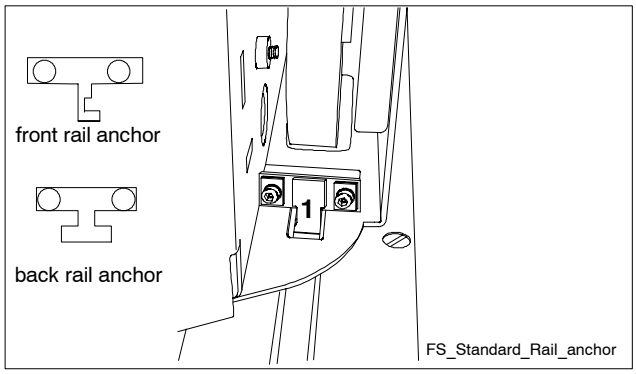
The rail anchors for front and back rails are different.



- Assemble the rail anchors **(1)** one per roller (pos. 19,20,21,22 in accessories box).

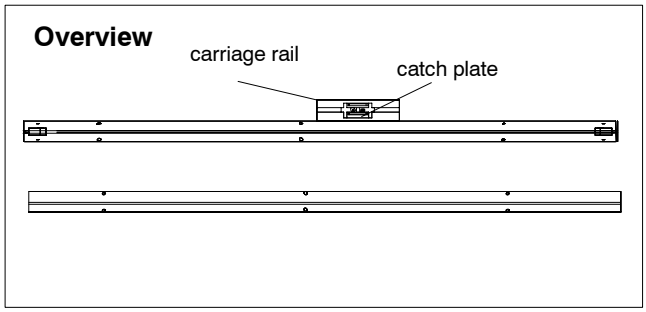
NOTE

After assembling the rail anchors the moving of the carriage over the whole range has to be tested. If the rail anchor is grinding it has to be positioned.

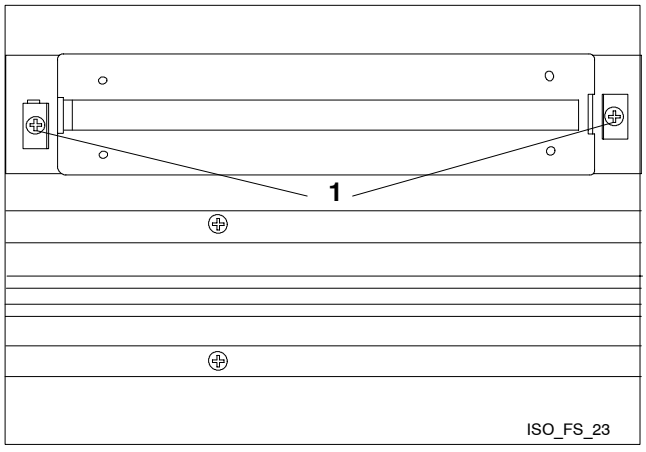
1.5. Installation of the catch plates (FS Standard without option Tomography)

NOTE

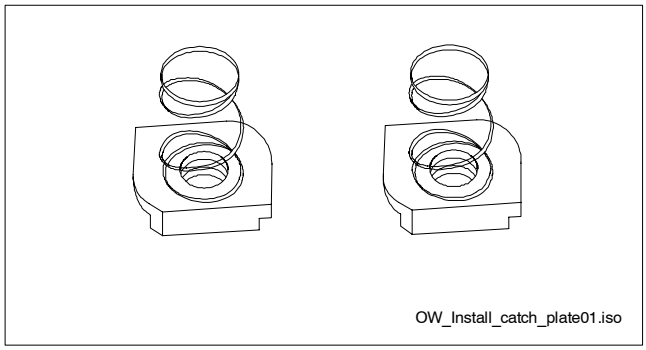
The figure shows an overview of the carriage rail with the catch plate. Depending on the system configuration one or more standard or sensing catch plates (e.g. additional wallstand position) have to be installed. Before starting the installation of the carriage rail, check the local planning room drawing and PRD for position.



- Determine the position of the carriage rail.
- Mark the position of the holes **(1)** 2x.
- Drill the holes depending on the fixing material.
- Place the dowels and fix the carriage rail.



The sliding blocks of the catch plate are modified with a spring at the back side and a thread at the front side. The new construction makes sure, that the catch plate is fixed proof.



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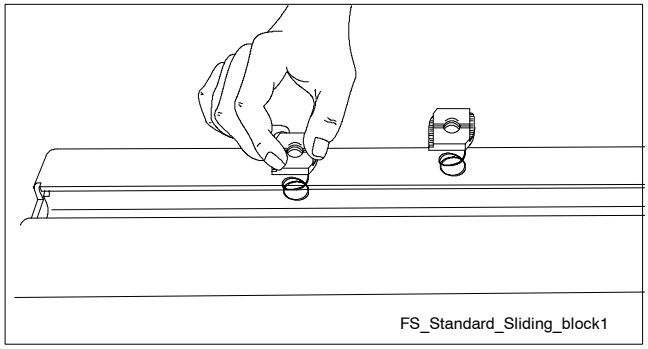
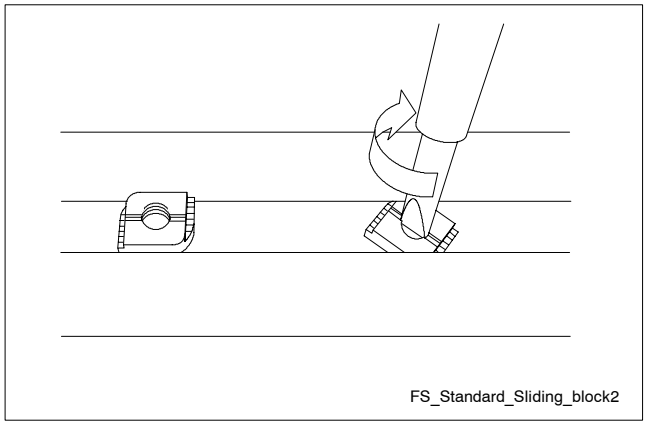
NOTE

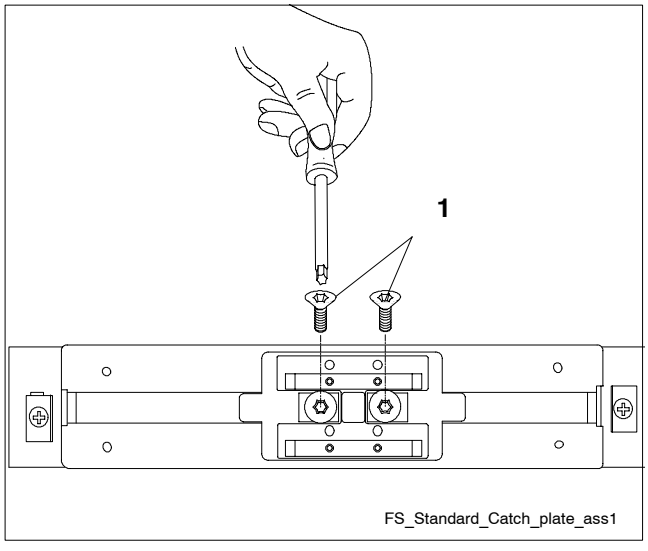
This chapter describes the installation of the catch plate for FS Standard columns without option tomography!

- Install the sliding blocks according to the figures.





- Insert the catch plate into the sliding blocks at the carriage rail and fix the catch plate with screws **(1)**.



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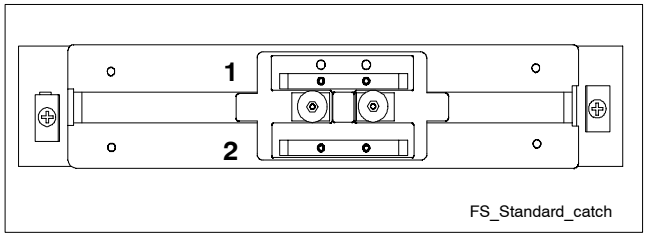
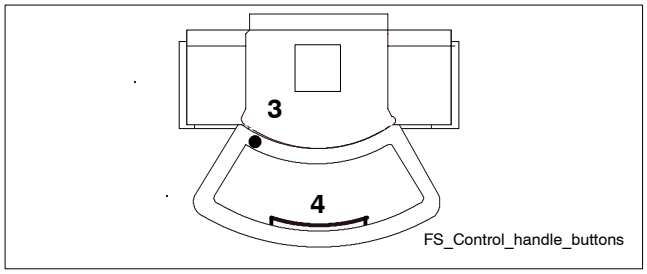
1.5.1. Standard catches

Part of delivery are three standard catch plates.

- Before positioning the catch plates check the function of the ledges.
  Actuating cam **(1)** = active by pressing the brake button **(3)** (brake is released).



System actuating cam **(2)** = active by pressing the system brake button **(4)** (brake is released).

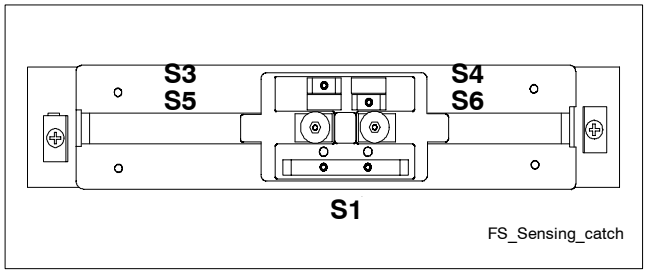


1.5.2. Sensing SID catch plates

For sensing seven lock-in positions can be programmed using switch cams S3 – S6.

The combinations indicate the position of the FS.

With the PC-program X-Scope informations of coded plates are stored automatically into the bucky controller memory (Refer to manual X-Scope). Each SID-catch plate has to be coded differently.



NOTE

*The mounted switch cam S1 affects that the column stops in every catch when the release all button **(1)** is pressed. Without S1 the column runs over the catches.*

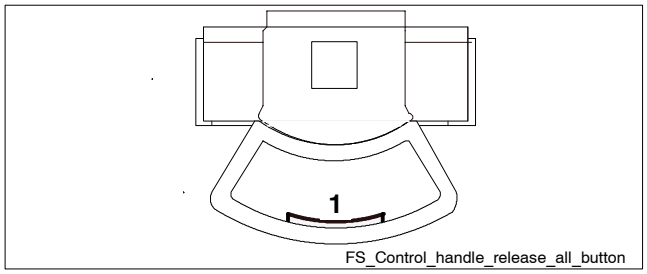


Table: Lock in positions

Catch	S4	S5	S6	S3
1	0	0	1	1
2	0	1	0	1
3	0	1	1	0
4	1	0	0	1
5	1	0	1	0
6	1	1	0	0
7*	1	1	1	1

*) Catch 7 is not supplied as standard
”1” = cam provided

1.6. Installation of the catch plate for tomo systems

Refer to chapter 6. ’Option tomography’

Continue with chapter 4. ’Installation of the tube arm’

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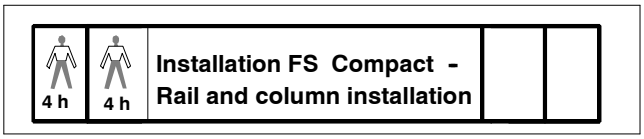
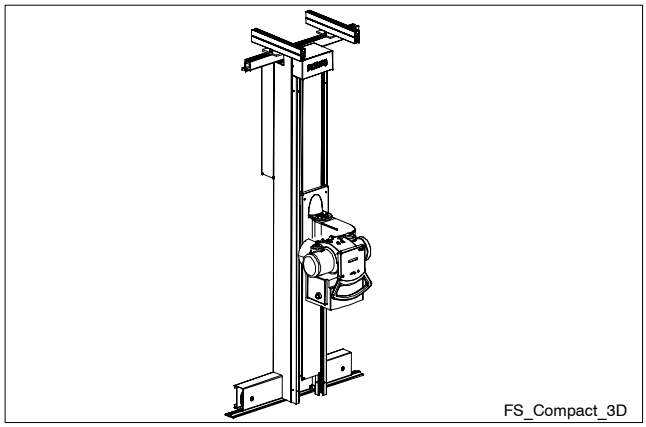
2. Installation of FS Compact





2.1. Installation of the rails

NOTE

Before starting the installation of the floor and ceiling/wall rails check the local planning room drawing and PRD for rail layout!

The floor rail is delivered in a set with two different lengths (1370 mm, 2550 mm). The long rail (2550 mm) is always used at the side of the bucky table.

The ceiling/wall rail (length 4000 mm) is delivered with a set of ceiling holders for different room heights or a set of wall holders.

2.1.1. Accuracy requirements

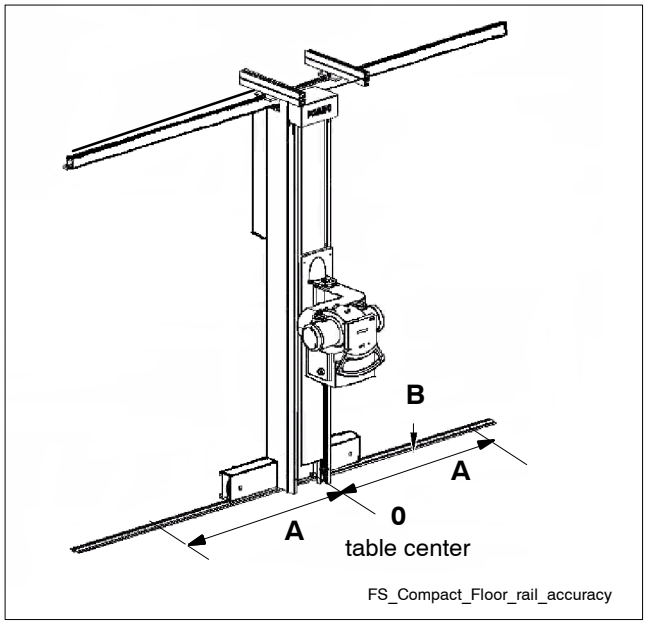
WARNING

For a good performance of the system it is important to align the floor rail very precisely!

A	1000 mm
B	≤ 1 mm

A = distance between table center and right/left side

B = tolerance for the parallelism and evenness of the floor rails



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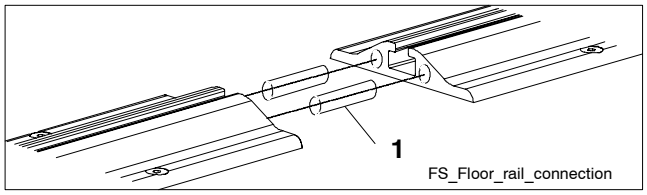
2.1.2. Preparation of the floor rail

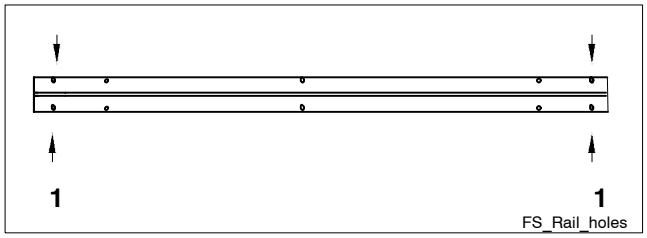
- Insert the pins **(1)** into the holes in the rails and connect the rails.



2.1.3. Mounting of the floor rail

NOTE

Use adequate fixing material depending on the ground!



- Align the floor rail parallel to the ceiling rail. For the distance between wall/ceiling rail and floor rail refer to the corresponding planning room layout.
- Determine and mark the drilling holes **(1)**.
  - Use the outer rail holes as drilling template for the rail.
- Drill the outer holes depending on the fixing material.
- Place the dowels and fix the rail.
- Use all other holes in rail as drilling template.
- First drill max. 5 mm holes in order not to damage the rail.
- Remove the rail.
- Drill the holes to final dimensions depending on the fixing material.
- Place the dowels and fix the rail.

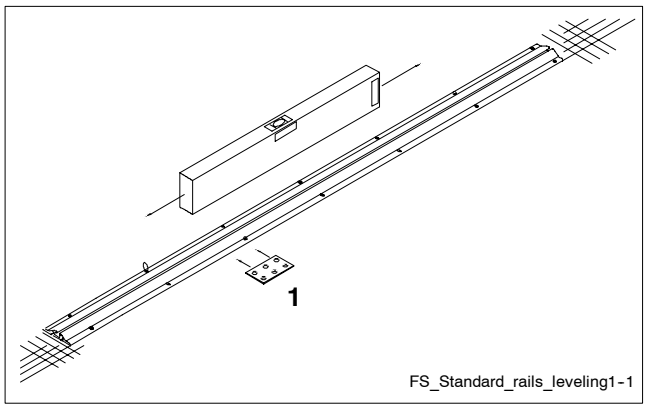
2.1.4. Height alignment of the floor rail

NOTE

In case of an uneven or instable floor linings have to be used to achieve the required height accuracy!

The linings are delivered in different thicknesses.

- Loosen the rail and position the balance plate between floor and rail.
- Use the spirit level to check the alignment.



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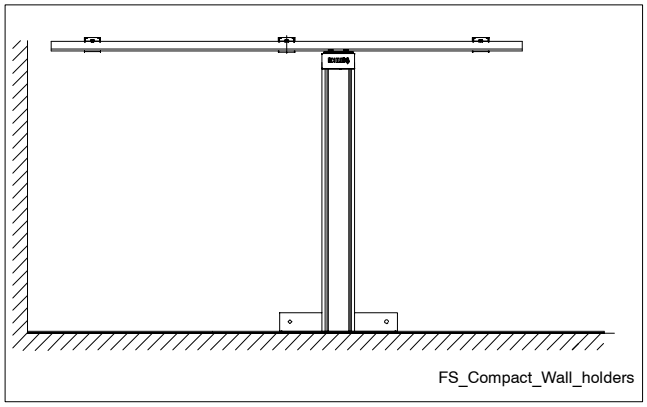
2.1.5. Installation of the guide rail

The guide rail (standard length 4000 mm) can be installed at the wall by using three wall holders or at the ceiling under construction (e.g. Unistrut, Graaf, Wieland or MSR) by using three ceiling holders. Before starting refer to the corresponding planning room layout

Fixation with wall holders

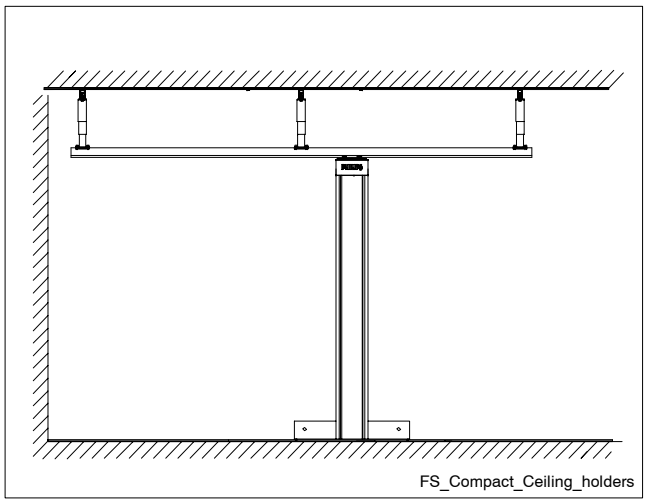
Min. ceiling height:	2560 mm
Min. distance between center of floor rail and wall:	242 mm
Max. distance between center of floor rail and wall:	387 mm


FS_Compact_Wall_holders

Fixation with ceiling holders

Ceiling height (short version):	2490...2591 mm
Ceiling height (middle version):	2590...2804 mm
Ceiling height (long version):	2798...3400 mm

Min. distance between center of floor rail and wall: 242 mm


FS_Compact_Ceiling_holders

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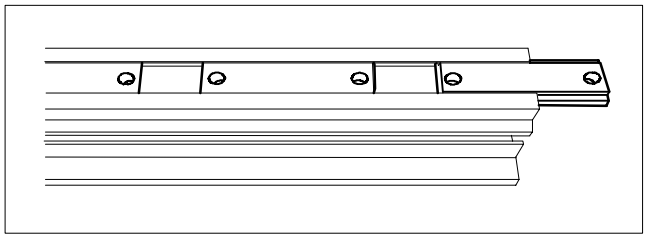
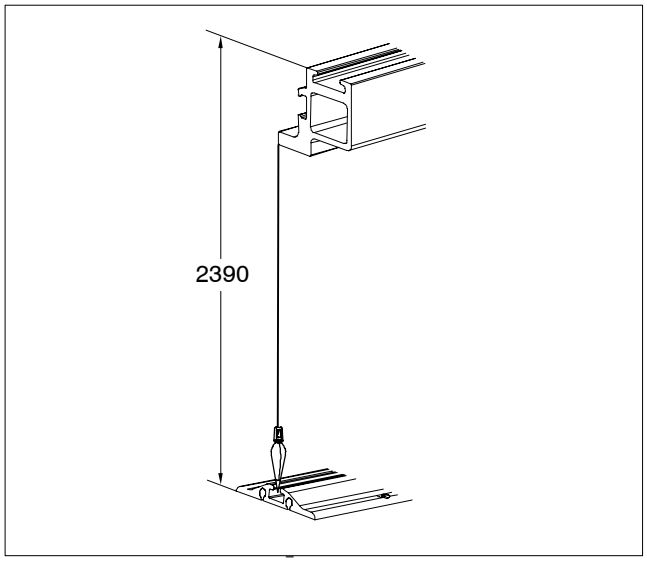
2.1.5.1 Installation with wall holders

- Mark the holes of the three wall holders at the wall. For the height and longitudinal position refer to your planning room layout.
- Drill holes according to the chosen dowels / screws from the static calculation.



- Install the three holders.
- Install the remaining parts of the holders.
- Uninstall the **three** long nuts from the ceiling holders and move them into the guide rail.



- Install the guide rail at the left and right holder first.
- Adjust the guide rail.
- The height must be **2390 mm** and the rear edge of the guide rail must be in the center of the floor rail. Use a plummet.

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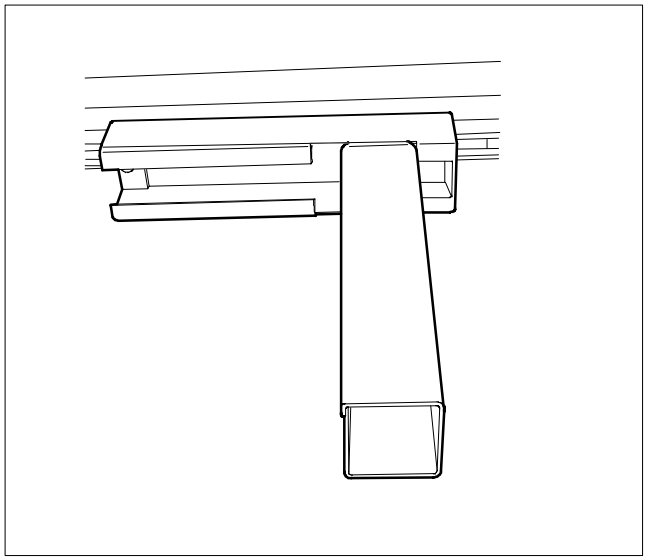
2.1.5.2. Installation with ceiling holders

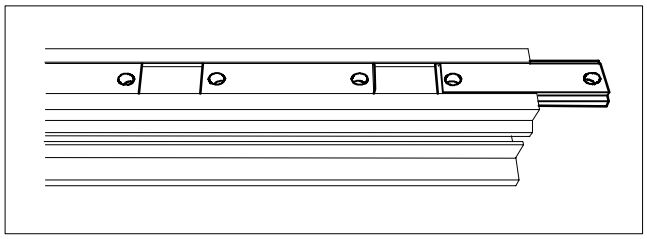
- Install the **three** base holders at the ceiling under construction first (in the figure the long version is shown).

  For the transversal position refer to the corresponding planning room layout.



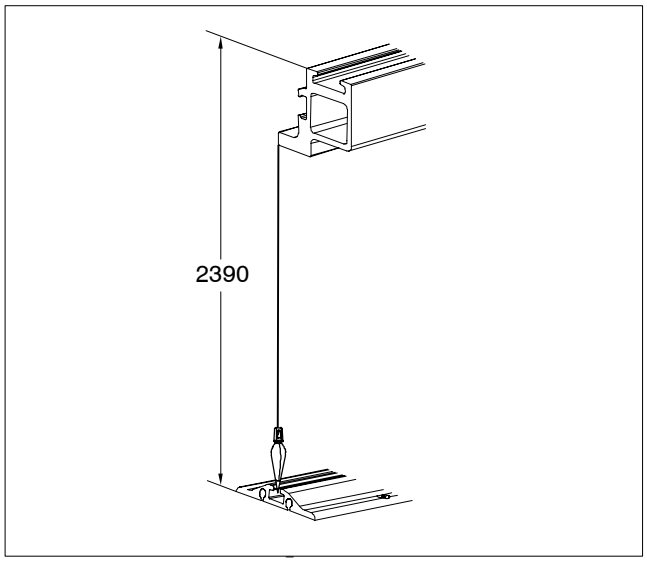
- Install the remaining parts of the holders.

  Uninstall the **three** long nuts from the ceiling holders and move them into the guide rail.



- Adjust the guide rail.
- Install the guide rail at the left and right holder first.

  The height must be **2390 mm** and the rear edge of the guide rail must be in the center of the floor rail. Use a plummet.



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2.1.5.3. Installation of the rail extension (optional)

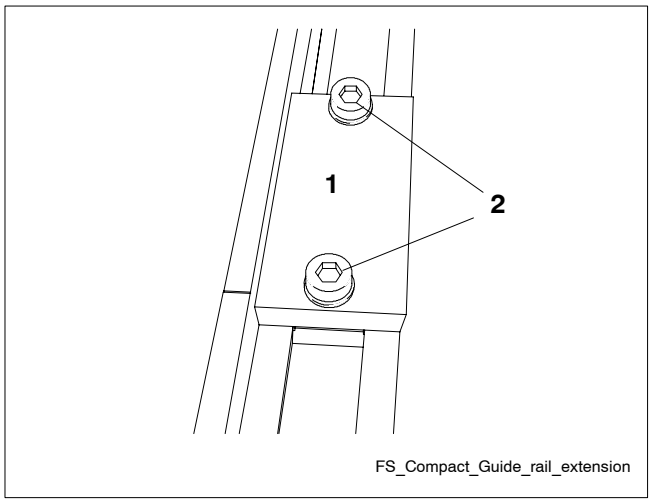
NOTE

The extension rail has to be connected to the mounted guide rail. The room layout determines the sequence of installation, in small rooms the extension rail has to be mounted after insertion of the column into the rails.

- Install the extension rail with an additional wall / ceiling holder. Refer to chapter 2.1.5.1. resp. 2.1.5.2..

- Connect the guide rail and the rail extension with connection plate **(1)**.

- Fix the screws **(2)**.



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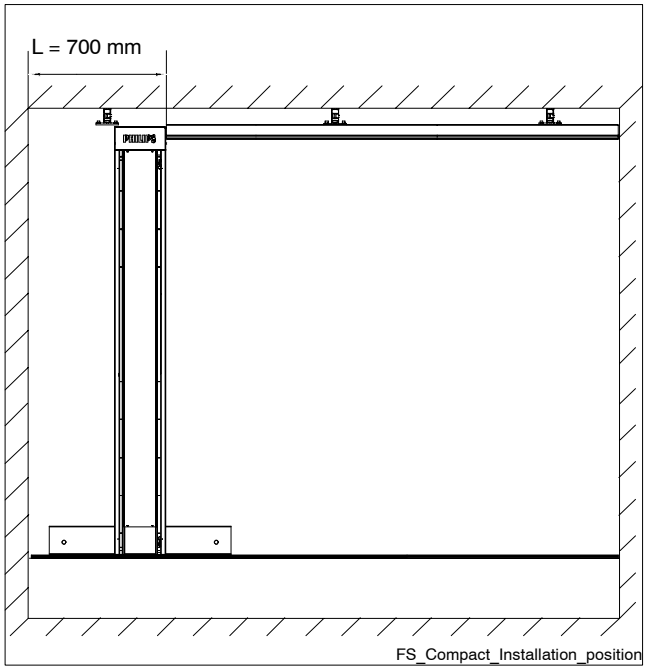
2.2. Insertion of the column into the rail

WARNING

Danger of injury
The following procedure should be done by at least two persons!
During the insertion of the column into the rails and the adjustment of the ceiling/wall rail one person has to secure the column against tilting!

For the insertion of the column the wall rail must be 700 mm smaller than the floor rail.

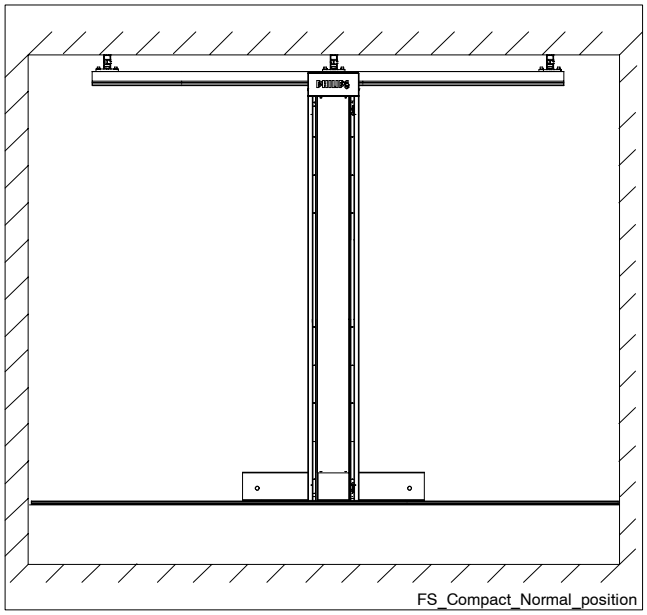
- Move the wall rail opposite to the installation side of the column and fix it (if applicable).
- Clean the floor rail.
- Insert the column carefully into the floor rail by lifting one wheel after the other.
- Move the column carefully into the guide rail.



WARNING

The column has to be inserted into the rails carefully in order not to damage the rollers. Clean the rails before inserting the column! Pay attention to the catch (micro switches) on the top of the column and on the guide rail!

- Move the column into the ceiling/ wall rail.
- Shift the wall rail back to normal position and fix it.



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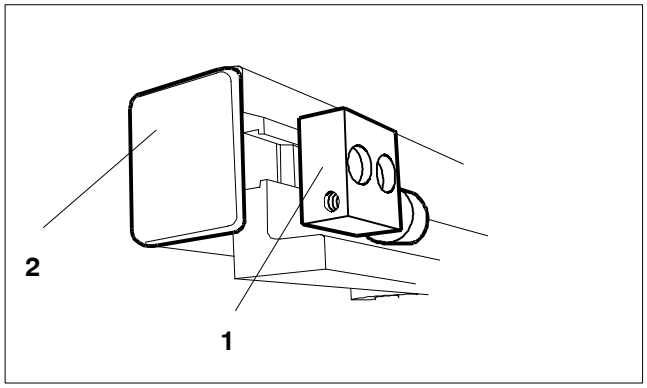
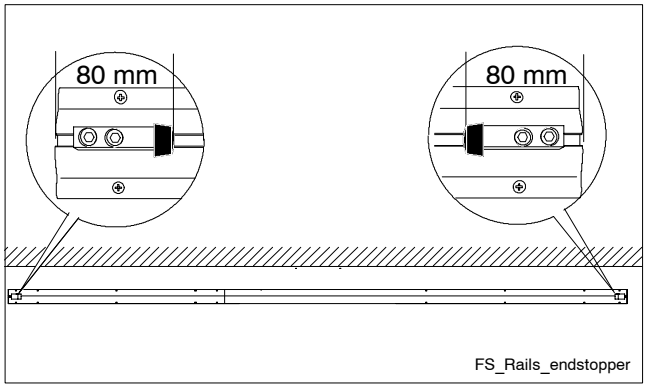
- Install both end stoppers at the guide rail **(1)**.
- Push the covers into the guide rail **(2)**.



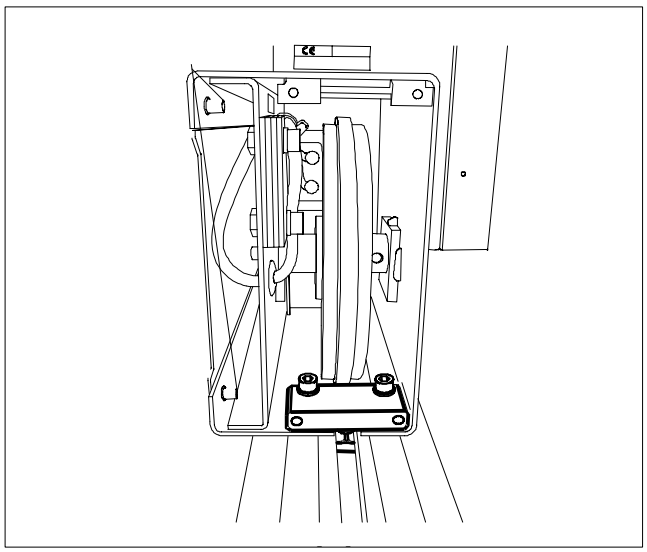
- Install the end stoppers 80 mm from the end of the floor rail.



- Insert the rail anchor into the rail and fix it **(2x)**.

NOTE

After assembling the rail anchors the moving of the carriage over the whole range has to be tested. If the rail anchor is grinding it has to be positioned.



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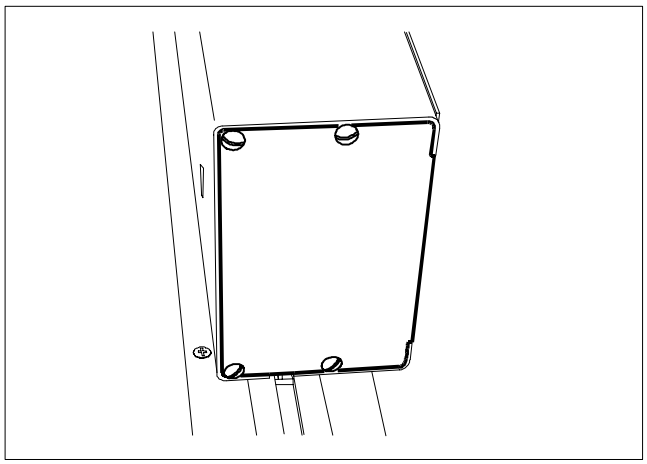
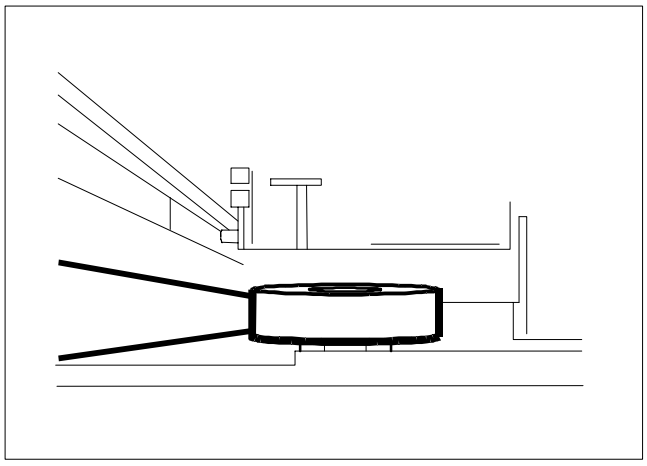
- Install the left and right floor carriage cover each with four flat headed screws.



2.2.1. Alignment of the guide rail

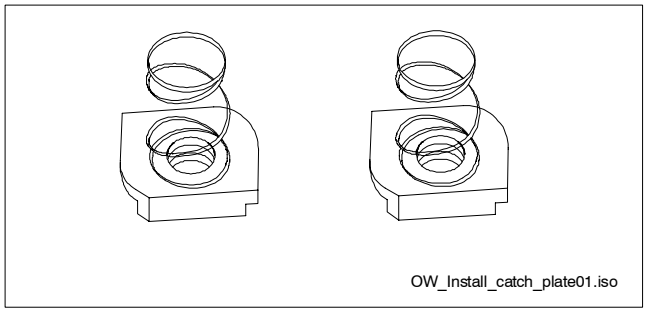
- Check the height alignment of the guide rail over the whole moving range of the column.
  - The white plastic bearings have to be centered on the guide rail over the hole moving range.
  - If not, re-adjust the height of the ceiling or wall holders.



- Check the vertical alignment of the column over its whole moving range.
  - If the alignment is not correct, re-adjust the horizontal position of the ceiling or wall holders.
- Fasten all screws of the ceiling or wall holders.
- Install the remaining holders.
- Fasten all screws at the holders.

2.3. Installation of the catch plates (FS Compact)

The sliding blocks of the catch plate are modified with a spring at the back side and a thread at the front side. The new construction makes sure, that the catch plate is fixed proof.



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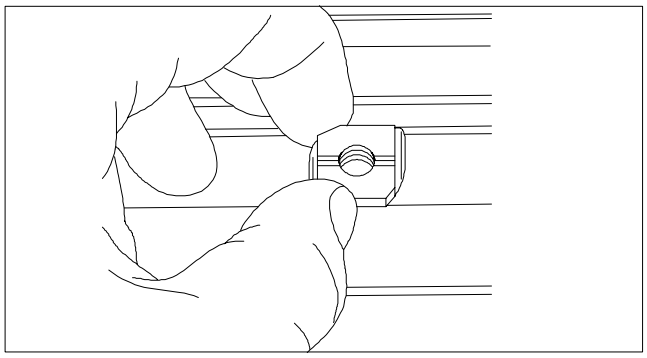
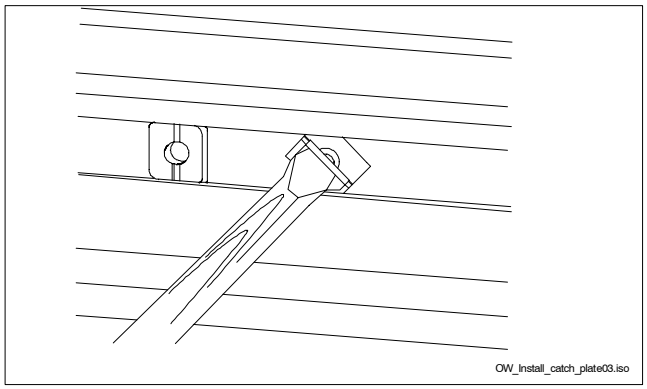
NOTE

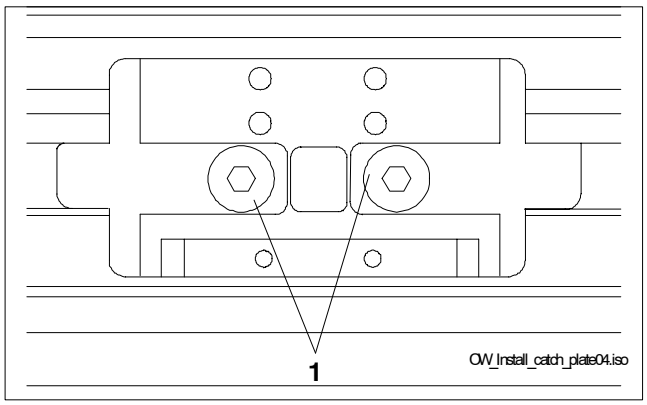
This chapter describes the installation of the catch plate for FS Compact columns.



- Install the sliding blocks at the guide rail according to the figures.



- Insert the catch plate into sliding blocks at the guide rail and fix the catch plate with screws **(1)**.



2.4. Final work

- Check the whole moving range of the column.

NOTE

The bearings have to be properly adjusted over the whole moving range. Use ceiling/ wall holders for adjusting the height and level of the rail.

Continue with chapter 4. 'Installation of the tube arm'

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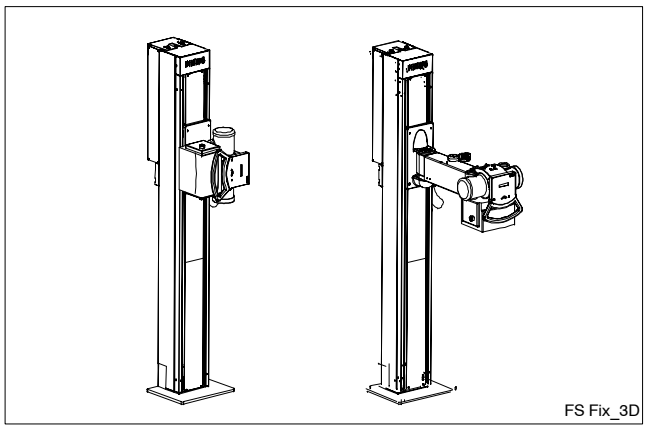
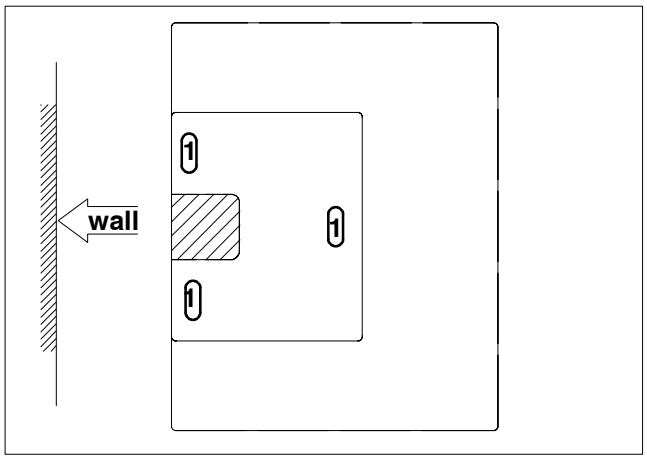
3. Installation of FS Fix

NOTE

Before starting the installation of the column check the local planning room drawing and PRD!



3.1. Preparation of the installation place



The floor column is fixed on three positions **(1)**.

- Determine the installation place.
- Place the template and align the installation place to the middle of the longitudinal axis of the BuckyDiagnost VE/VT.
- Fix the template.
- Drill three holes 14 mm, 95 mm deep in the middle of the marked area of the three fixing points.

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3.2. Column installation

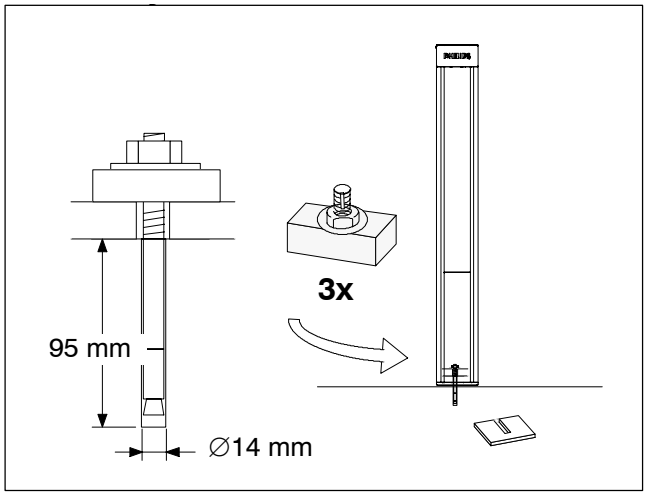
WARNING

Danger of injury

Secure the column against tilting while bringing it into the upright position.

3.2.1. Installation to the floor

- Bring the column into the upright position and move it to its final installation place.
- Fix the clolumn at the floor with the supplied screws and washers (Pos. 11,12,13, 14 in the accessories box).
- Check the verticality of the column with a spirit level
  - If required, use linings (Pos. 26, 27 in the accessories box) for compensation.
- Fasten all bolts.



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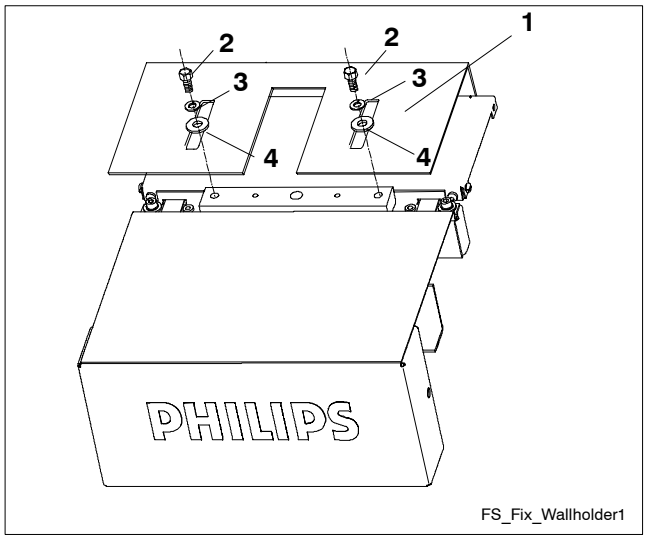
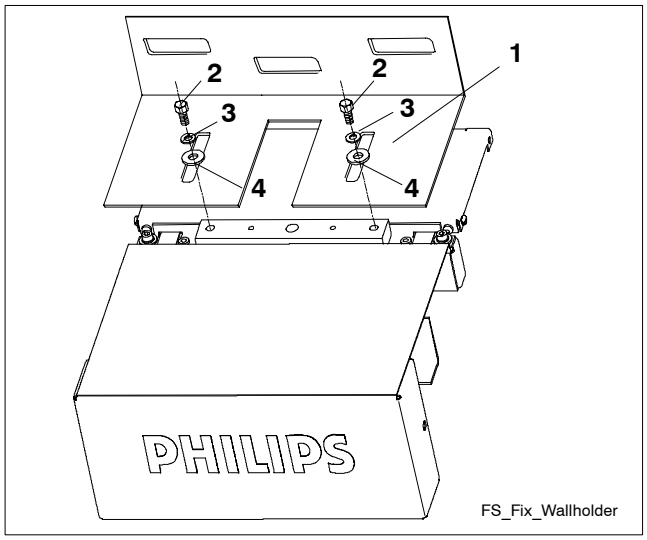
3.2.2. Installation to the wall

- Screw on the wall holder **(1)** to the column with screw **(2)**, spring **(3)**, washer **(4)** (Pos. 5, 6, 7 in the accessories box). The wall holder can be mounted to the column upwards or downwards (see figure below) .

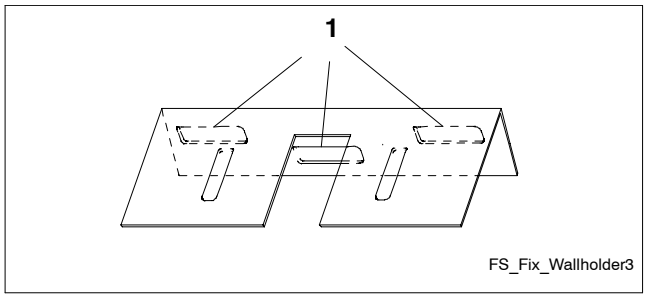




- Mark the positions of the drilling holes **(1)** on the wall.
- Remove the wall holder.

Note:

If the wall holder is mounted downwards, the column has to be moved before drilling the holes.



- Drill the holes (8 mm).
- Screw on the wall holder to the column.
- Fix the wall holder to the wall.

Continue with chapter 4. 'Installation of the tube arm'

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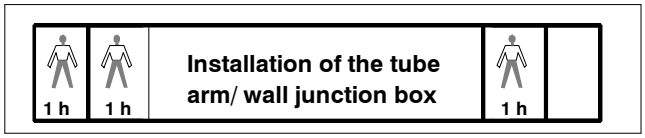


4. Installation of the tube arm

The following procedure should be done by at least three persons.

WARNING

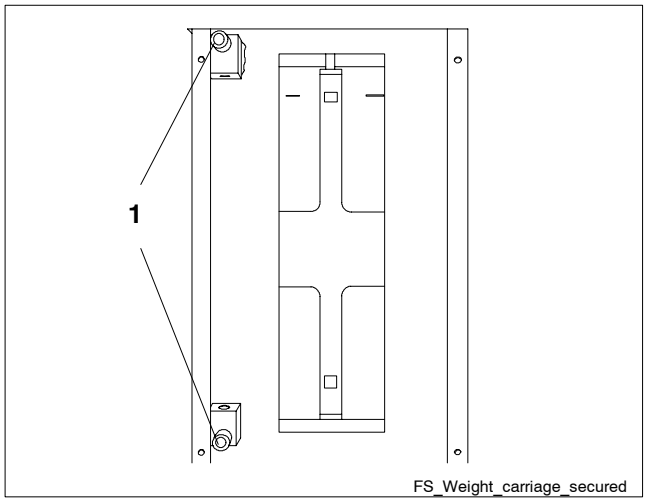
Danger of injury!

If the cover is removed, never put your hands or fingers inside until the system movement has been blocked:

Insert the two 'red head' security screws.

Remove the security screws after work is finished and place them back into their parking position!

- The counterweight carriage must be left secured with screws **(1)** until the tube arm and the counterweights are completely installed!



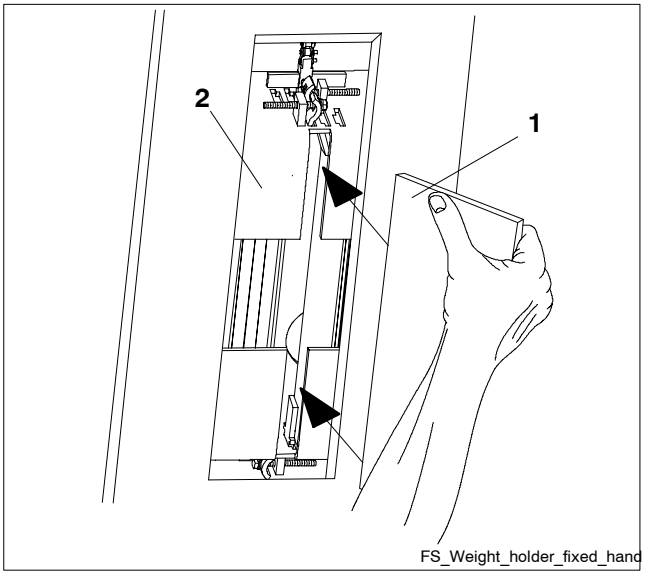
4.1. Insertion of the counterweights

- Insert the counterweights **(1)** into the weight carriage **(2)** at the back of the column.
- Place the weights equally at the left and right side of the weight carriage.

NOTE

The number of weights depends on the configuration of the system. For FS Standard with all options (tomo, tracking, sensing) 14 weight plates are used. Without options 13 plates are used (11 thick plates and two thin plates).

The The balance of the system and the adjustment of the counterweight has to be done during the Setting to work procedure of the BuckyDiagnost Floor System.



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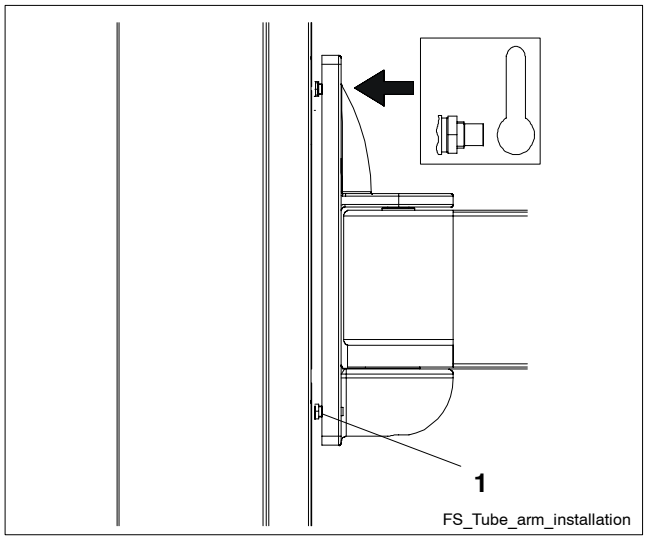
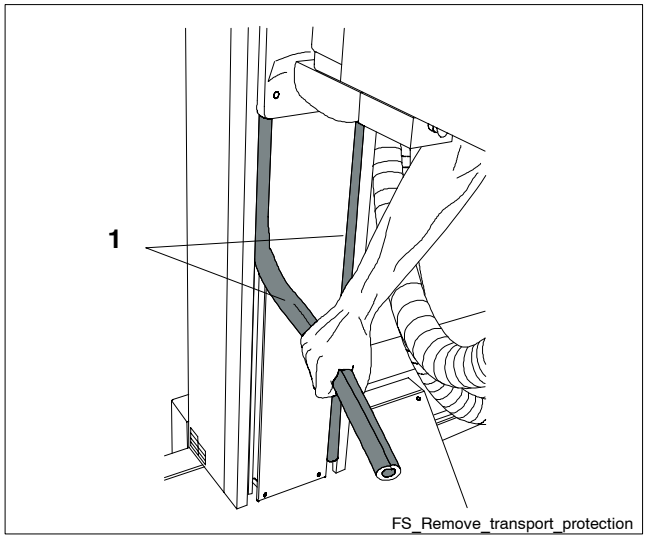
4.2. Fixing of the tube arm to the column



- Remove two screws **(1)** at the lower part of the carriage.
- Attach the tube arm.
- Re-insert the removed screws **(1)**.



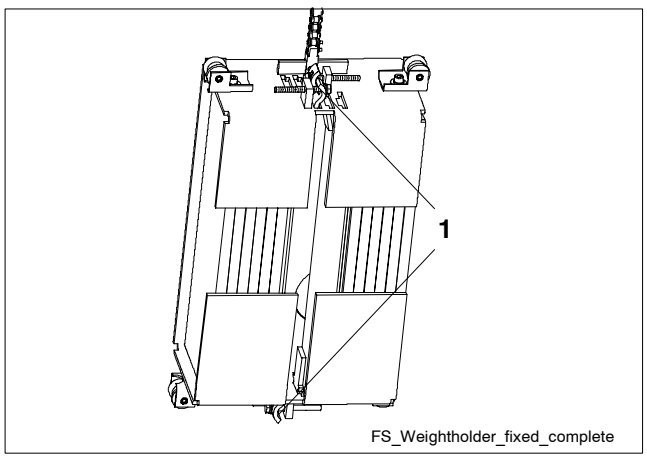
- Remove the transport protection (insulating tubes **(1)**).

4.3. Weight position fixation

The position of the counterweights in the weight carriage is fixed at the top and at the bottom **(1)**.

NOTE

The tube arm has to be moved up and down. Without power connection the brakes for tube arm movement are active, so that extra force is necessary, to move the tube arm up and down.



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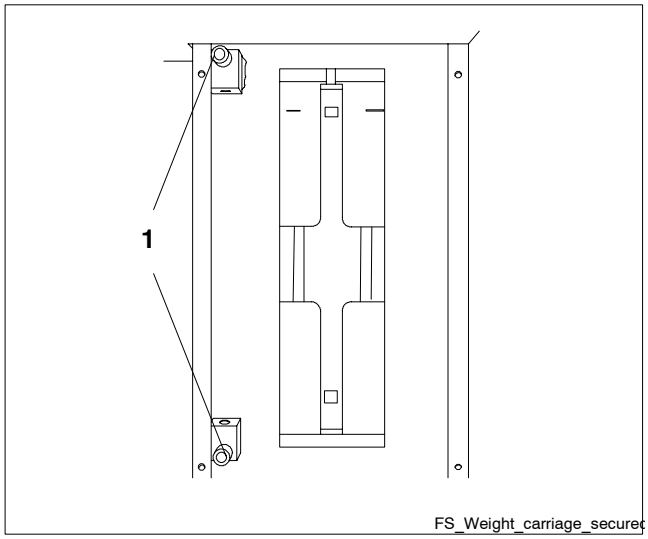
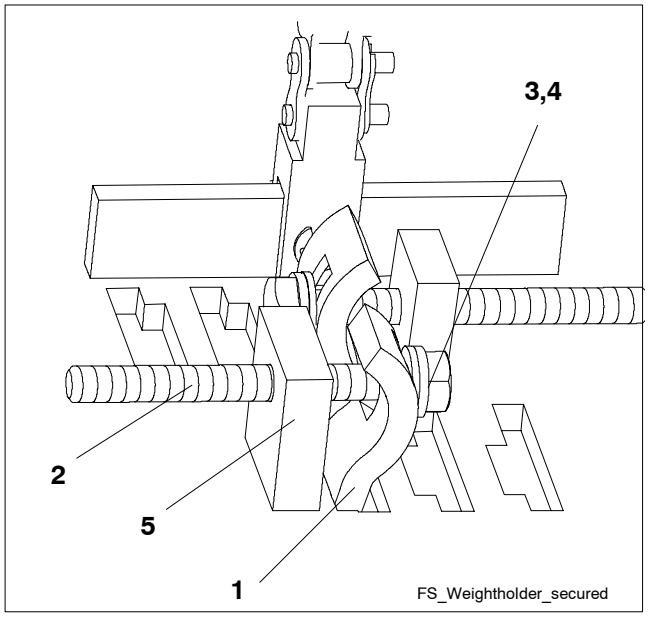
- Remove the transport locking screws **(1)**.
- Move the tube arm up to get access to the weight carriage.



- Use items 23...25 delivered in the accessories box for weight fixation.
- Insert clamp **(1)** (2x) into on of the three slots.
  - The used slot depends on the number of the installed counterweights.
- Fix the clamp with the screw **(2)**, spring washer **(3)** and washer **(4)** at the block **(5)** (2x). Make sure, that the counterweights are secured properly with the clamps.
- Move the tube arm down to get access to the weight carriage bottom.
- Repeat the procedure described above at the bottom of the weightholder.



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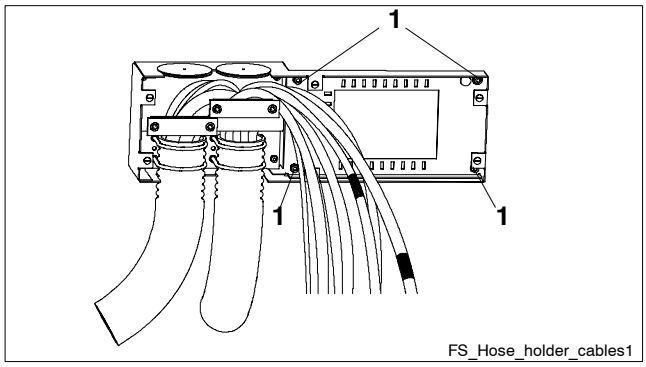
4.4. Cable routing

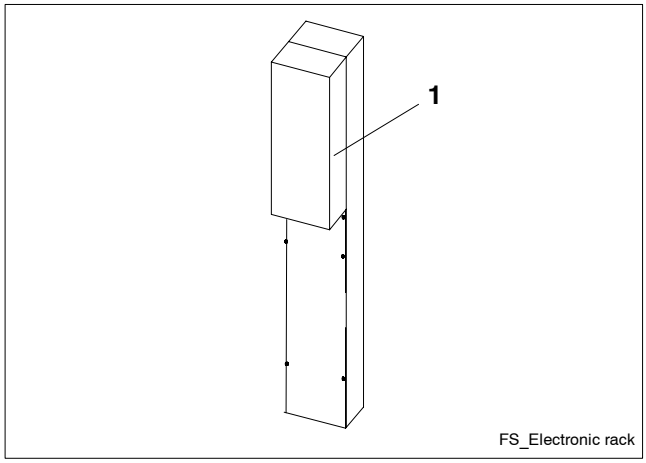
4.4.1. Standard cable routing

- Remove the cover of the corrugated hose holder.



- Screw on the corrugated hose holder to the back of the column with 4x screws **(1)**.
  - The screws are pre-installed at the back of the column

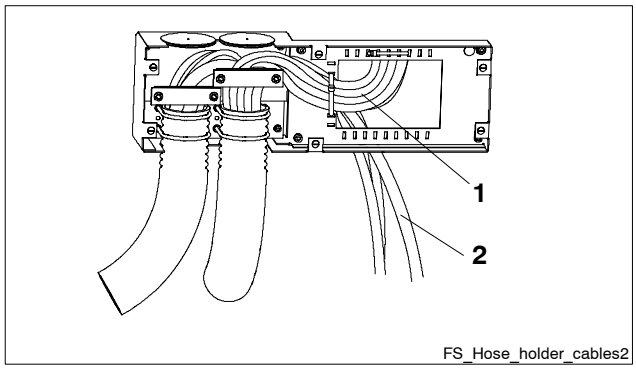
- Remove both side covers of the electronic rack **(1)**.



- Route and fasten the cables **(1, 2)**. All cables are labelled with the destination name.

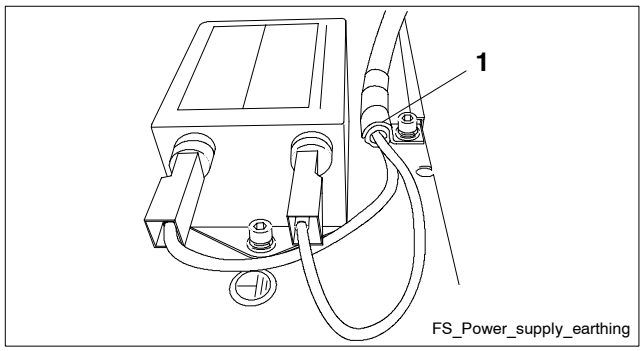
NOTE

*Cables **(2)** for option tomo within FS Standard systems are routed down to the column stand.*



- Use the shielding clamp **(1)** for the mains power cable UL1.

- Connect the cables to the UZ connecting board.



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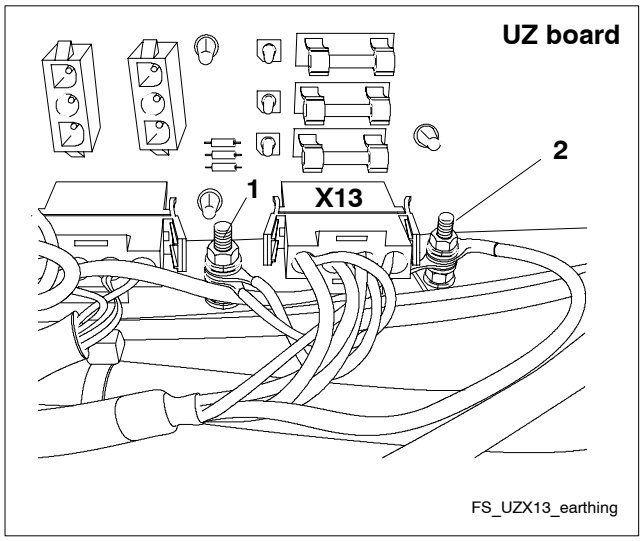
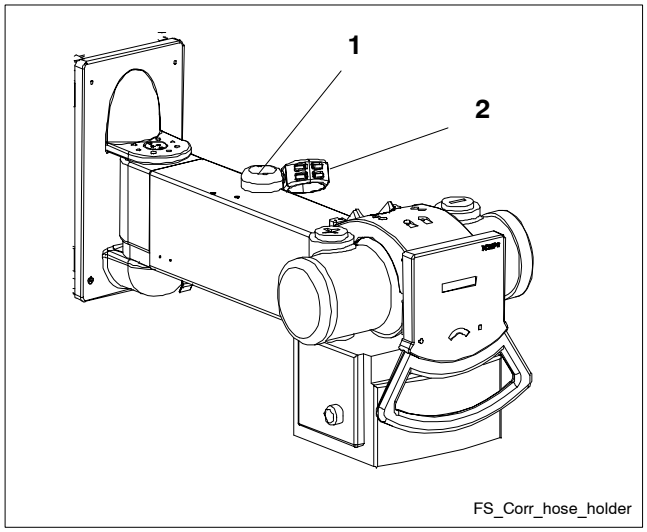
- Make sure that the two red wires are connected to bolt **(1)** and the grounding cable is connected to bolt **(2)**.



- Install the corrugated hose holder **(1)**.
- Fix the corrugated hose with the clamp **(2).**



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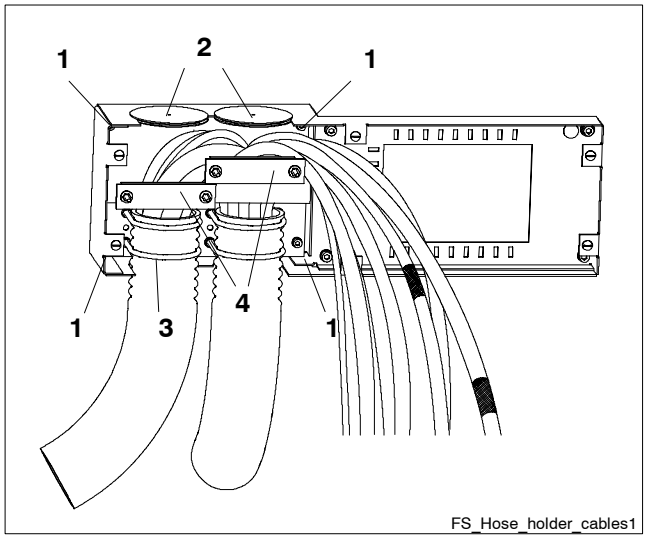
4.4.2. Change of cable routing outlet (left/right)

Note

The delivered version depends on the questionnaire data. Standard installation respects a left hand side wallstand. For this version the corrugated hose outlet is on the right side of the column (view from front). If changing from right to left outlet is necessary, the following procedure has to be done before mounting the corrugated hose holder to the column.

- Remove the four 3 mm Allen screws **(1)** from the corrugated hose holder.
- Remove the holder.
- Remove the two round blind caps **(2)** from the upper side of the metal cable duct.
- Remove the clamps **(3)** 4 x from both corrugated hoses.
- Remove the cable clamps **(4)**.
- Remove the two corrugated hoses including the cables from the hose holder.
- Change the position of hose A to the positon of hose B and vice versa.
- Fix the hoses with the clamps **(3)** and the cable clamp **(4)**.
- Turn the metal cable duct 180 °.
- Mount the corrugated hose holder with the four 3 mm Allen screws **(1)**.
- Mount the complete metal cable duct with the corrugated hoses to the column.
- Mount the two round blind caps **(4)** to the upper side of the metal cable duct.



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5. Electrical connection

The system is supplied with sets of cables including plugs connected one side.

5.1. Earthing

- Connect the column earth cable (UAX11) to the system power distribution unit. Refer to the earthing diagram in the corresponding SMI manual

5.2. Power supply cable

- Connect the power suppy cable (220V/UL1) to the system power distribution unit. Refer to the connecting diagram in the corresponding SMI manual.

5.3. Signal cable and CAN bus cable

- Connect the signal cable and the CAN bus cable (optional) according to the connecting diagram in the corresponding SMI manual.

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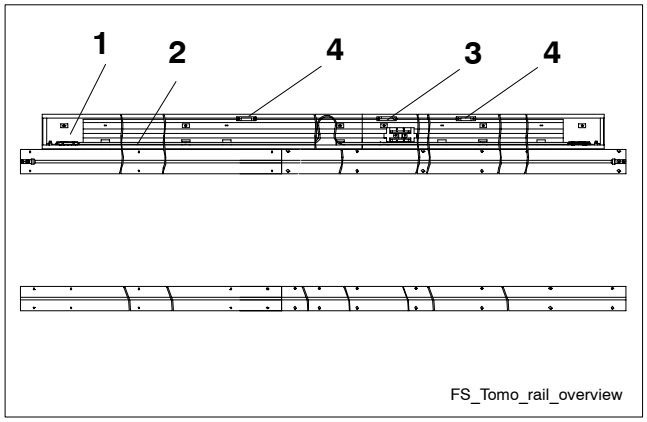
6. Option tomography

6.1. Installation of the tomo rail

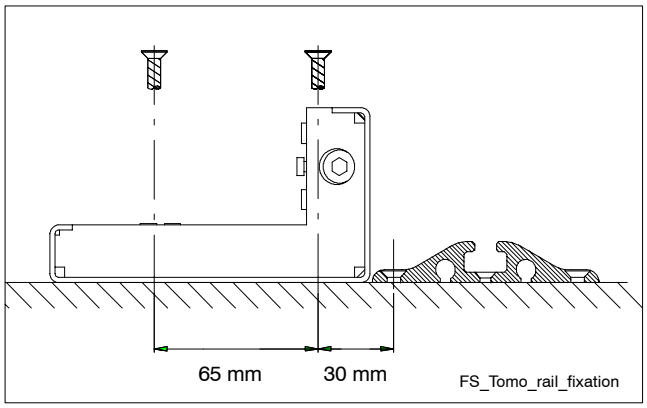
The tomo rail **(1)** is delivered in two rail parts (three parts with rail extension) and has to be connected and installed at the floor. The toothed belt **(2)** has to be fixed at both sides of the tomo rail. The tomo center swtich cam **(3)** and left and right safety switch cams **(4)** have to be installed and adjusted.



NOTE

The fixing material has to be supplied locally!

- Park the column in end position.
- Position the tomo rail on the floor according to figure.
- Mark position of the drilling holes.
- Remove the rail and drill the holes.
- Mount the rail.



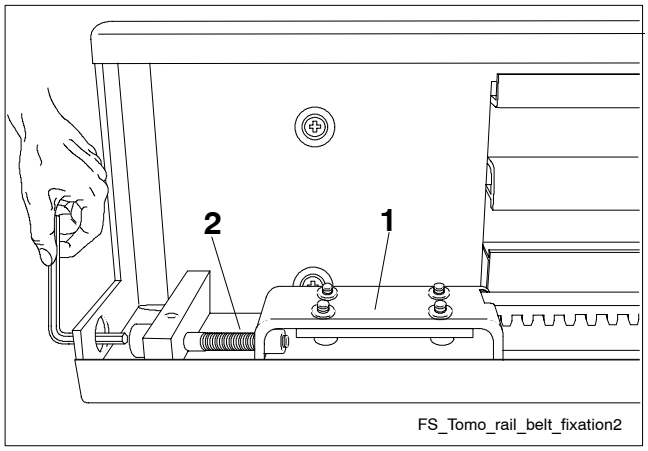
6.2. Installation of the tomo belt

6.2.1. Mounting the tightening block at patient head end side

NOTE

*The tightening block **(1)** for the tomo belt has to be installed at the patient head end side.*

- Loosen the tightening setscrew **(2)** to allow the adjustment of the tomo belt tension later on.



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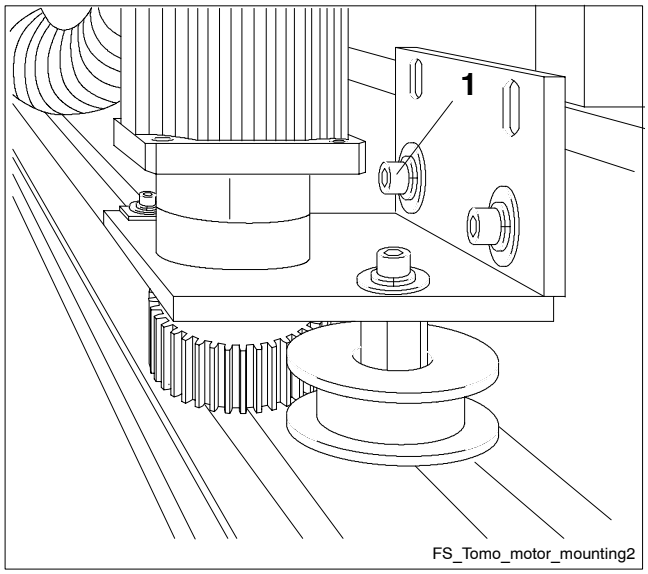
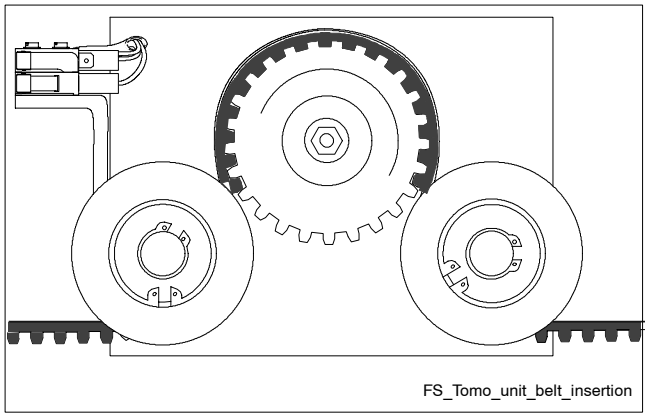
NOTE

The tomo unit is delivered pre-installed at the column.For insertion of the column into the rails it is mounted above its working position.

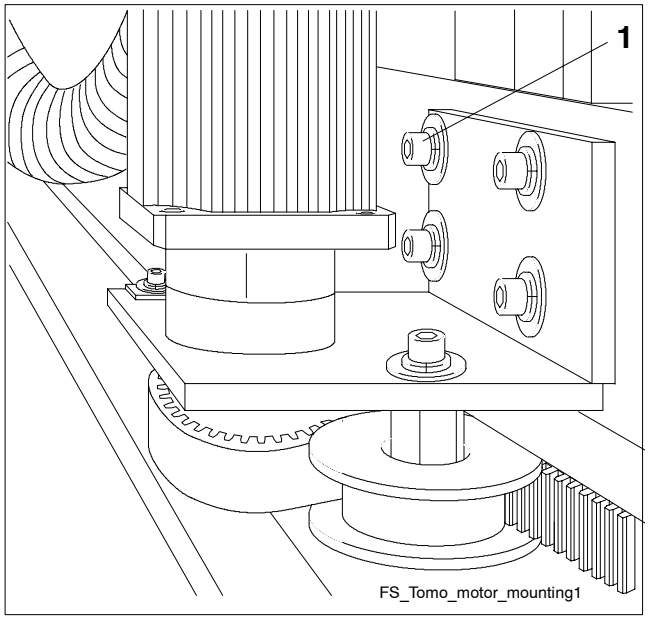
- Unscrew the two screws **(1)** and remove the tomo unit.



- Turn the tomo unit and insert the belt as shown.



- Fix the tomo unit with the four screws **(1)**.



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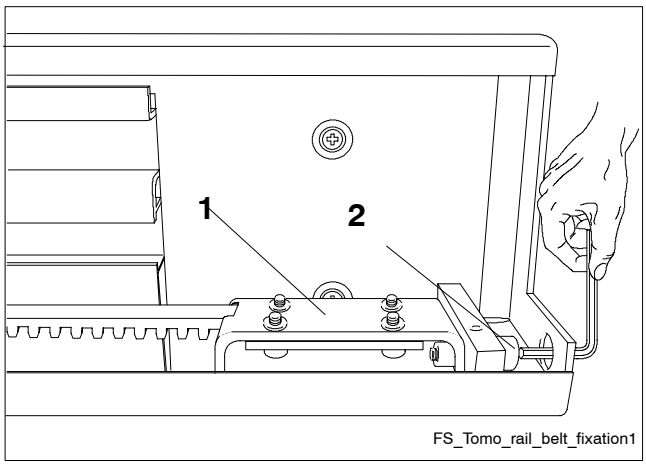
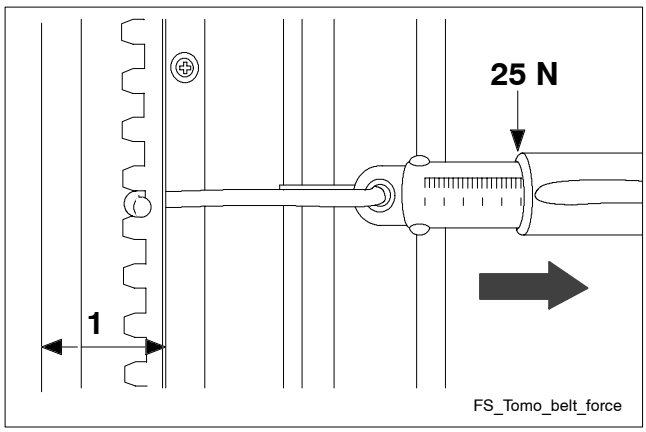
6.2.2. Mounting the tightening block at patient foot end side

- Fix the tightening block **(1**) with screw **(2)**.



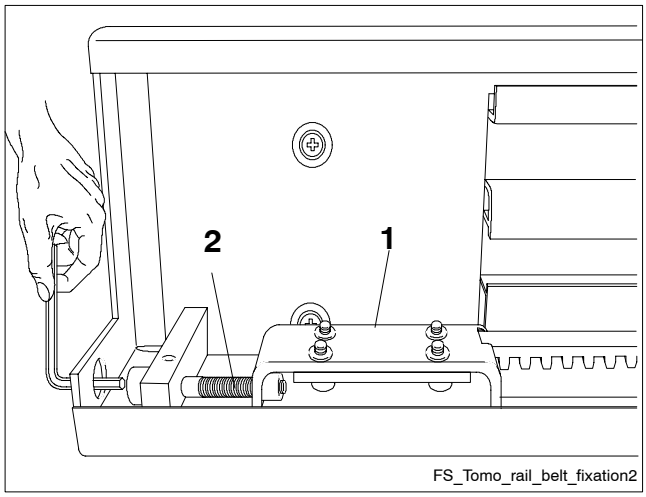
6.3. Adjustment of the tomo belt tension

- Move the column to its end position.
- Check the tension of the belt at the tomo center position with a spring balance.
  - With a force of 25 N the distance **(1)** between the edge of the tomo rail and the toothed belt has to be approx. 50 mm.



If necessary loosen or tighten the setscrew **(2)** at the tightening block **(1)** to tense the belt.

- Repeat the procedure as written before.



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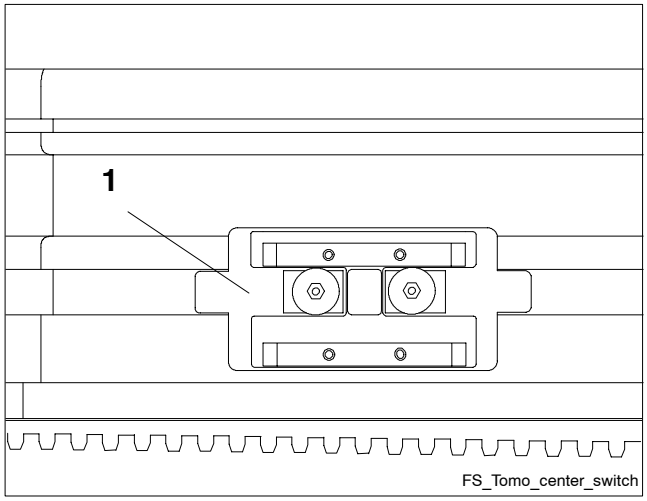
6.4. Installation of the catch plate and tomo center cam

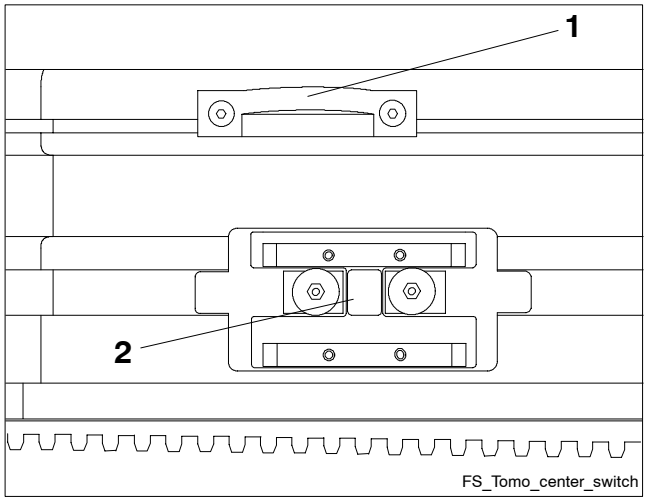
6.4.1. Table center catch plate

- Mount the catch plate **(1)** handtight, so that it still can be moved along the rails.
- Move the column int the table center position.
- Move the catch plate, so the the pin of the catch locks into the catch plate.
- Mark the position of the catch plate.
- Fix the catch plate.

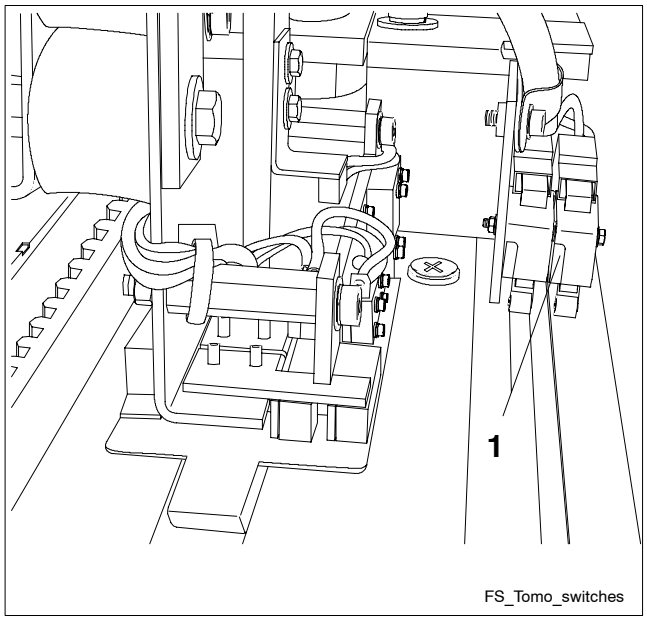


6.4.2. Tomo center position cam

- Mount the tomo center cam **(1)** handtight, so that the cam can still be moved along the rails.
- Move the column into the table center position so that the pin of the catch locks into the catch plate **(2)**.



- Move the tomo center cam, so that the tomo center switch **(1)** is activated by the cam.
- Mark the tomo center cam position.
- Fix the tomo center cam.



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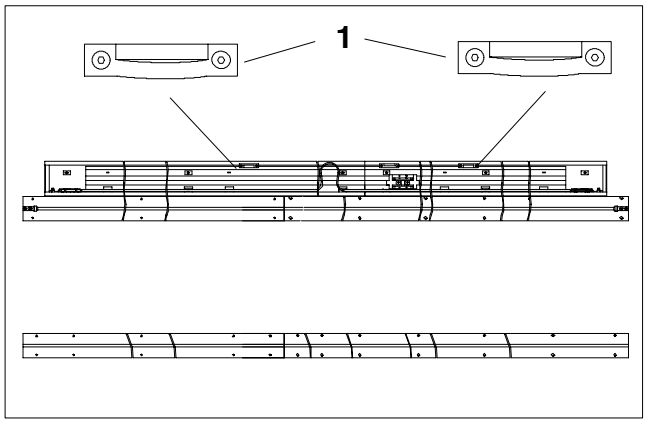
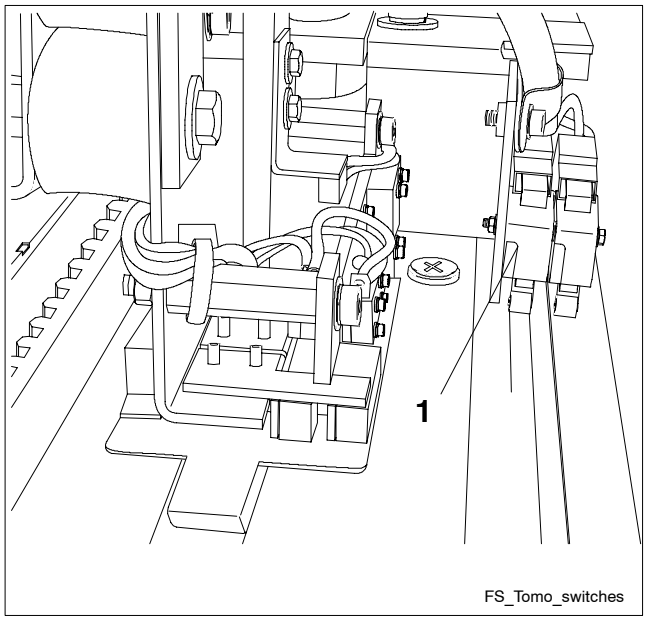
6.4.3. Tomo safety switch cams



- Install safety end position cams **(1)** 650 mm left and right from the tomo center position.



- Move the column left and right position and check the function of the tomo safety switch **(1)**.

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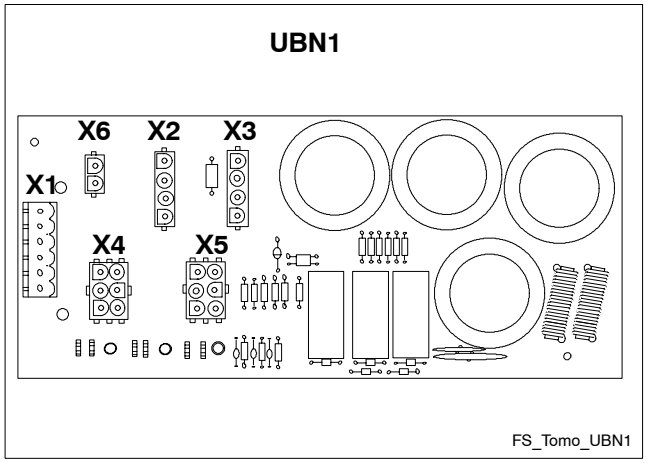
6.5. Electrical connection tomography

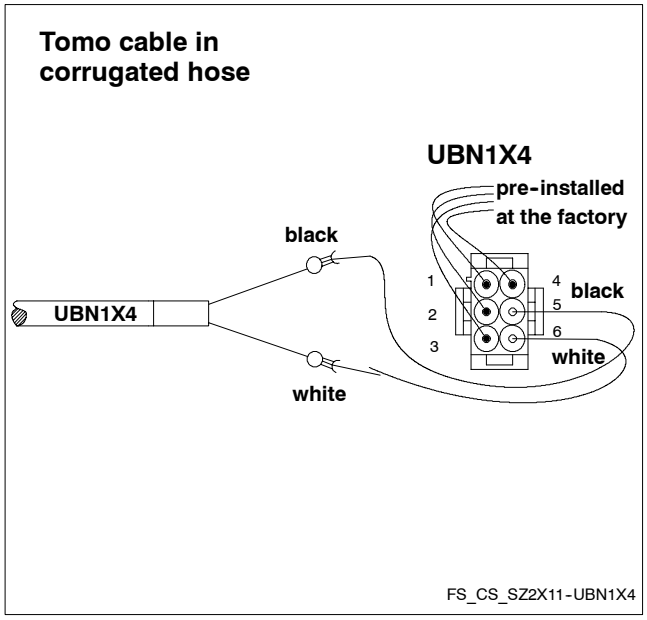
The figure shows the board **UBN1**, located at the right side of the column carriage.

For the electrical connection of tomo **X4** has to be used.



The tomo cable **UBN1X4** coming out of the corrugated hose is splitted into a black and white wire.

- Connect the black wire to pin 5 on the board **UBN1X4**.
- Connect the white wire to pin 6 on the board **UBN1X4**.



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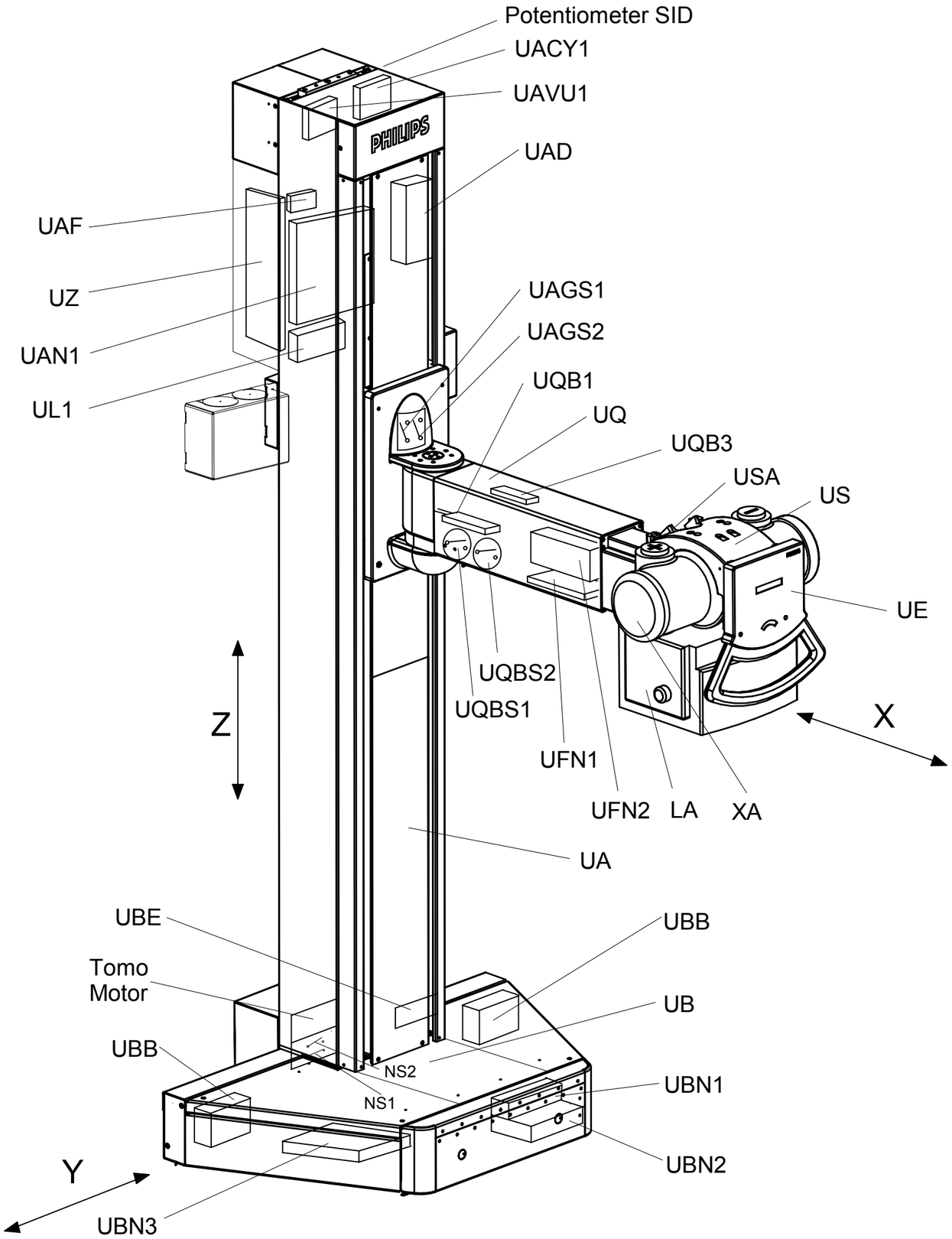

LA = Collimator
NS1 = Tomo safety (head and foot end)
NS2 = Tomo longitudinal centered
UA = Column
UACY1 = Brake telescope movement (z-direction)
UAD = Tracking controller
UAF = Vertical position sensor (z-direction)
UAGS1 = Switch vertical SID position (z-direction)
UAGS2 = Switch Tomo working position (z-direction)
UAN1 = Power supply
UAVU1 = Tracking motor
UB = Column stand
UBB = Brake longitudinl (Y-direction)
UBE = Catch and SID position switches
UBN1 = PCB Tomo safety circuit
UBN2 = Tomo controller longitudinal (Y-direction)
UBN3 = Tomo power supply
UE = Control handle
UFN1 = Tomo controller alpha movement
UFN2 = Tomo 2 alpha drive
UL1 = Power filter
UQ = Transverse/ Telescope arm
UQB1 = Stroke magnet for beta rotation
UQBS1 = Switch for beta rotation position
UQB3 = Brake for lateral movement (x-direction)
UQBS2 = Position switch for lateral movement (x-direction)
US = Tube housing support
USA = Switch for alpha rotation position
UZ = PCB connection board
XA = Tube

BuckyDiagnost FS
Standard
Survey of units

A3 03-12-10 Schr.

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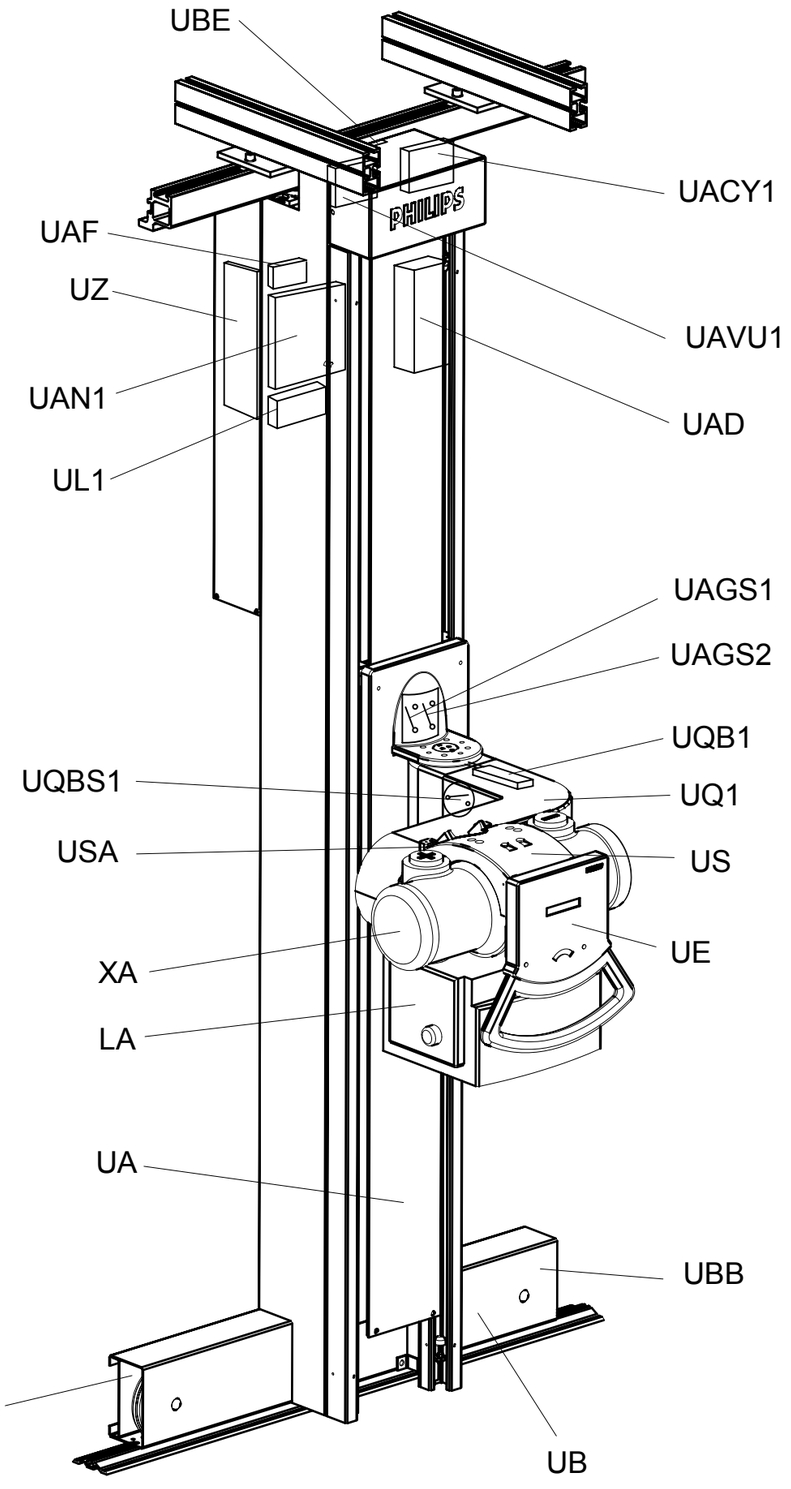

LA = Collimator
UA = Column
UACY1 = Brake telescope movement (z-direction)
UAD = Tracking controller
UAF = Vertical position sensor (z-direction)
UAGS1 = Switch vertical SID position (z-direction)
UAGS2 = Switch Tomo working position (z-direction)
UAN1 = Power supply
UAVU1 = Tracking motor
UB = Column stand
UBB = Brake longitudinal (Y-direction)
UBE = Catch and SID position switches
UE = Control handle
UL1 = Power filter
UQ1 = L-shaped arm
UQB1 = Stroke magnet for beta rotation
UQBS1 = Switch for beta rotation position
US = Tube housing support
USA = Switch for alpha rotation position
UZ = PCB connection board
XA = Tube

A3 03-12-10 Schr.

BuckyDiagnost FS
Compact
Survey of units

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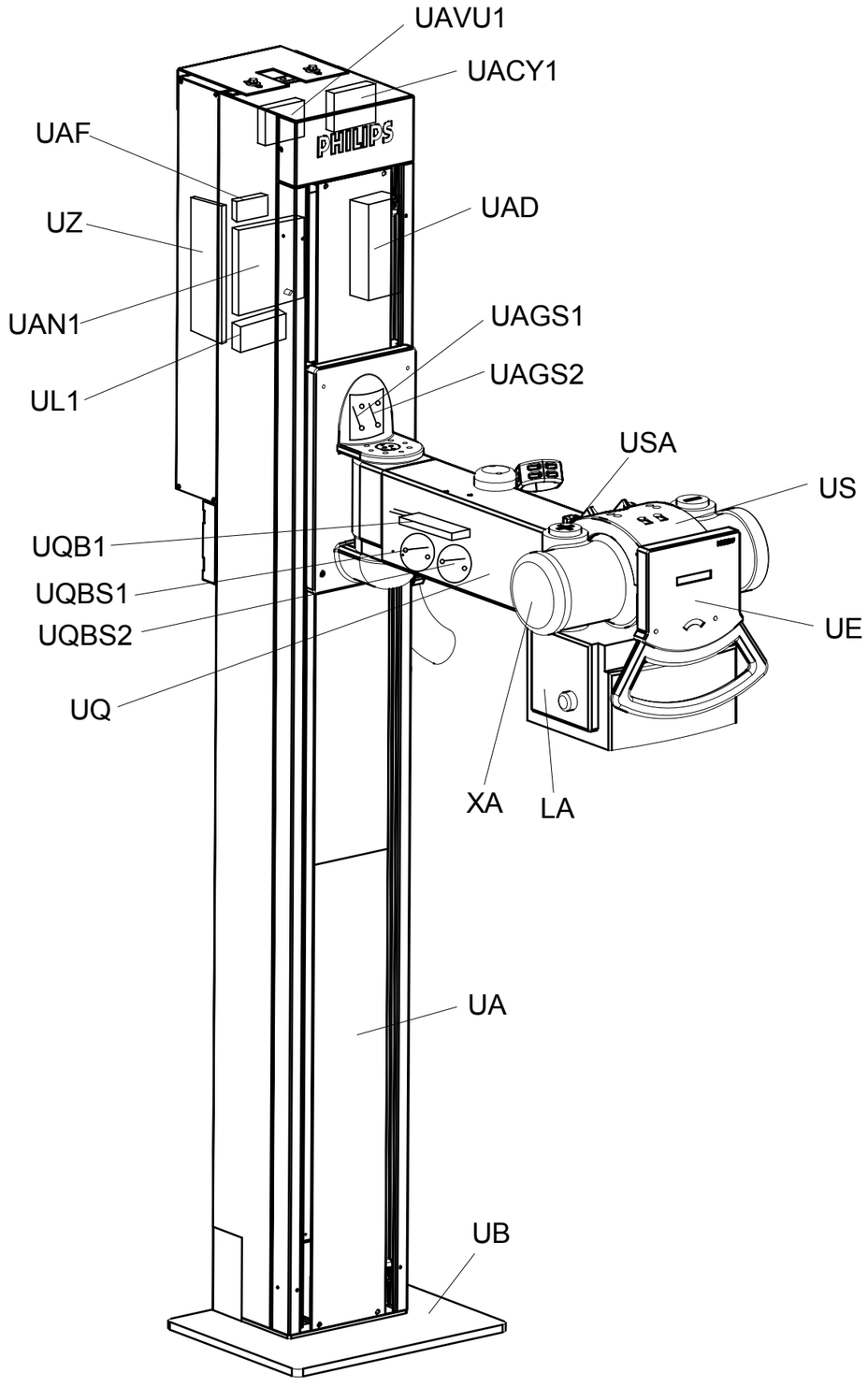

LA = Collimator
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UACY1 = Brake telescope movement (z-direction)
UAD = Tracking controller
UAF = Vertical position sensor (z-direction)
UAGS1 = Switch vertical SID position (z-direction)
UAGS2 = Switch Tomo working position (z-direction)
UAN1 = Power supply
UAVU1 = Tracking motor
UB = Column stand
UE = Control handle
UL1 = Power filter
UQ = Transverse arm (Option)
UQB1 = Stroke magnet for beta rotation
UQBS1 = Switch for beta rotation position
US = Tube housing support
USA = Switch for alpha rotation position
UZ = PCB connection board
XA = Tube

A3 03-12-10 Schr.

BuckyDiagnost FS
Fix
Survey of units

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LIST OF PAGES AND MODULES

MODULE CODE NUMBER: 4512-983-02851

3-1... 3-4 (04.0)

Installation of the BuckyDiagnost TH2/TF

Contents

1. Mounting Place of the BuckyDiagnost table TH2/TF 3-2

2. Alignment of the BuckyDiagnost table TH2/TF 3-2

3. Change Position of the AMPLIMAT Chamber from left to right Side 3-3

3.1 Connection Location at the BuckyDiagnost table 3-4

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1. Mounting Place of the BuckyDiagnost table TH2/TF

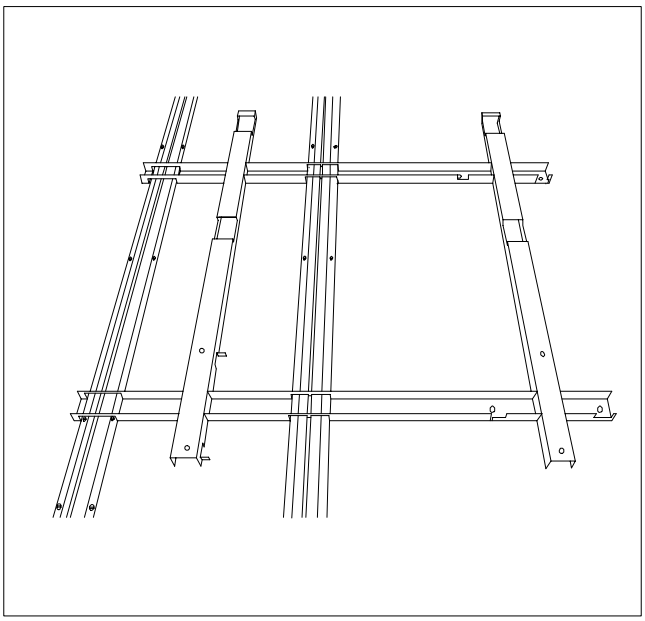
NOTE

Refer to the local planning data for the table position.

- Determine the working position of BuckyDiagnost FS to BuckyDiagnost table.

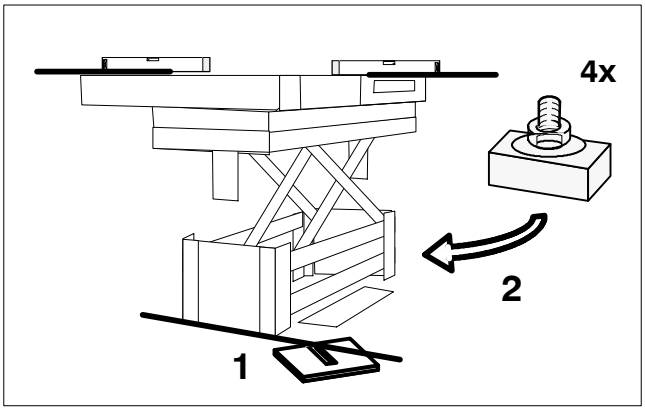
– Use the template to mark the table fixing positions.

- Mark the four fixing points at the floor.
- Drill holes ∅**12 mm** about **100 mm** deep in the middle of the marked area of the four fixing points.
- Insert the four anchor dowels into the holes.



2. Alignment of the BuckyDiagnost table TH2/TF

- **1** Level the table in both directions by using a spirit level or by using the laser alignment tool.
  – If necessary, use the spacer.
- **2** Insert **4 x** the fixing block, the special washer and fasten the nut with a spanner.



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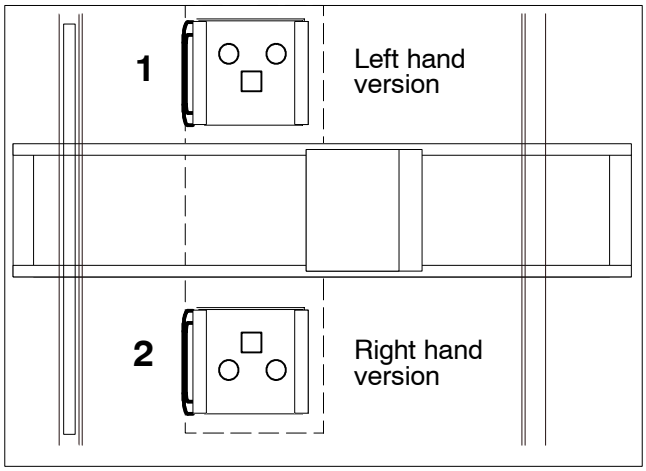
3. Change Position of the AMPLIMAT Chamber from left to right Side

If the position of the BuckyDiagnost table must be changed from left **1** to right **2** side then a manipulation of the connector at the AMPLIMAT chamber is necessary.



- **1** Remove the table top by removing the four screws.
- Mark the center line of the table top to the frame (both sides).
- Remove the table top.

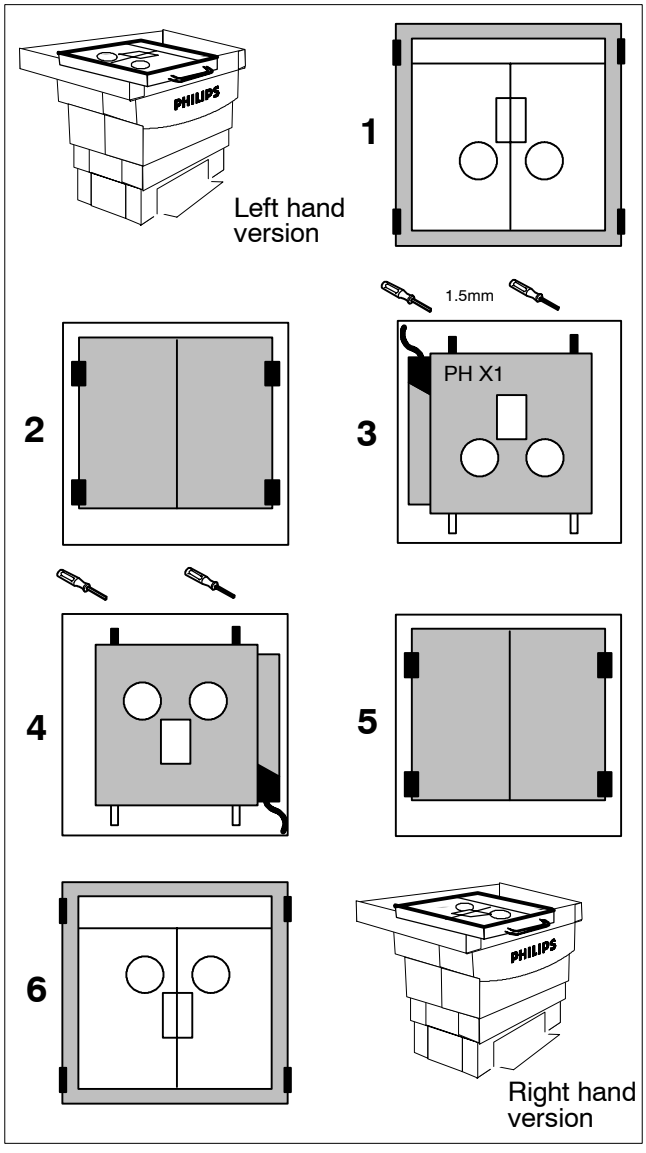
- **2** Dismantle the anti-scatter grid by unscrewing the four metal holders.
- Remove the anti-scatter grid.

- **3** Dismantle the AMPLIMAT chamber by loosening the two grub screws.
- The wire assignment on the connector **PH X1** must be changed crosswise, the violett wire on **X1:1** with the black wire on **X1:3**.

- **4** Place the measuring chamber in the new position.
- Fix with the two grub screws.

- **5** Re-install the anti-scatter grid.
- Fix it.

- **6** Re-install the table cover in new position
- Fix it.



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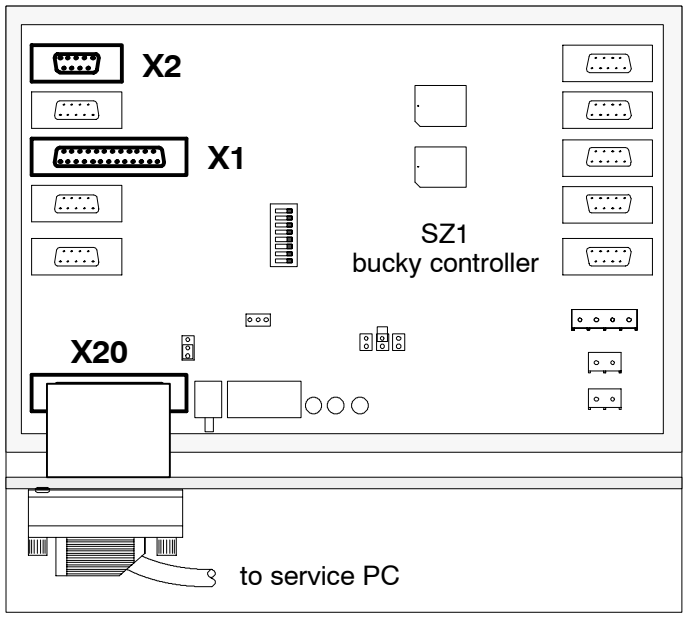
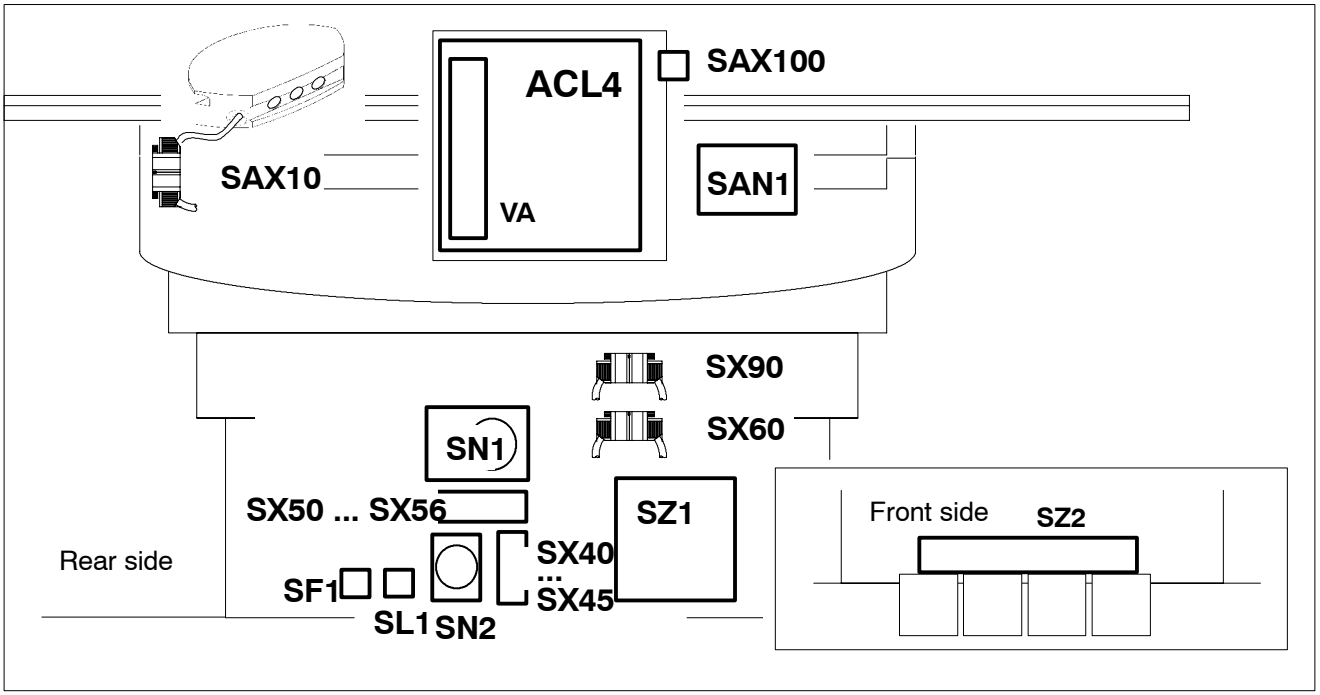
3.1 Connection Location at the BuckyDiagnost table

Power supply 230 VAC	**SX50 ... SX56**
Power supply 24 ... 30 VDC	**SX40 ... SX45**
Power supply TH2	**SN1**
Power supply ACL4	**SN2**
bucky controller	**SZ1**
CAN bus in	**SZ1X2**
Signal bus	**SZ1X1**
Connection to PC (X-Scope)	**X20**
Amplimat to generator	**SX60**
Tomo CAN bus	**SX90**
Second table control, option	**SAX10**
bucky brake, option	**SAX100**
Motor amplifier board	**SZ2**
Tomo drive & control	**SAN1**





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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06981

3-1...3-2 (04.0)

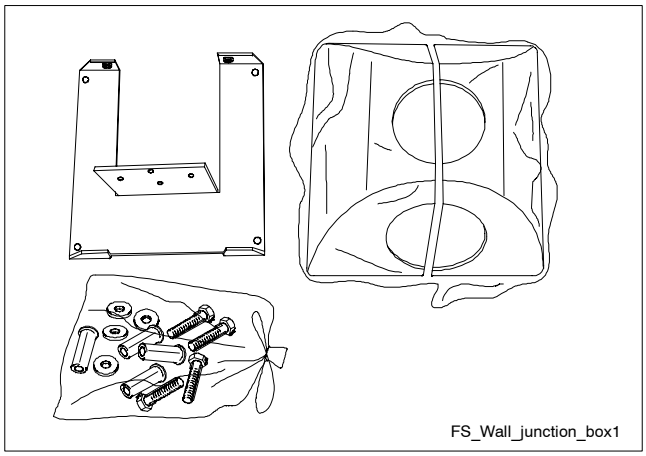
Installation of the wall junction box

1. Installation of the wall junction box

NOTE

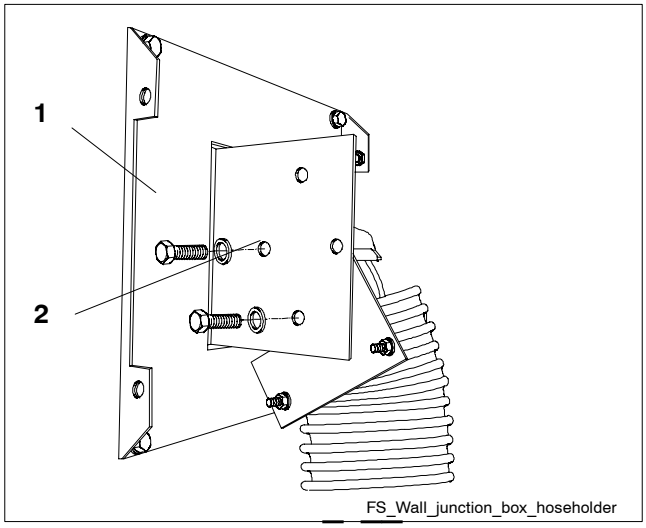
For the installation of the wall junction box refer to local planning room data.

The wall junction box and fixing material is part of the accessories box!



1.1. Wall mounting of the wall junction box

- Screw on the base plate **(1)** at the wall.
  - Use four screws and dowels.
- Screw on the fixing plate **(2)** with the corrugated hose at the base plate.



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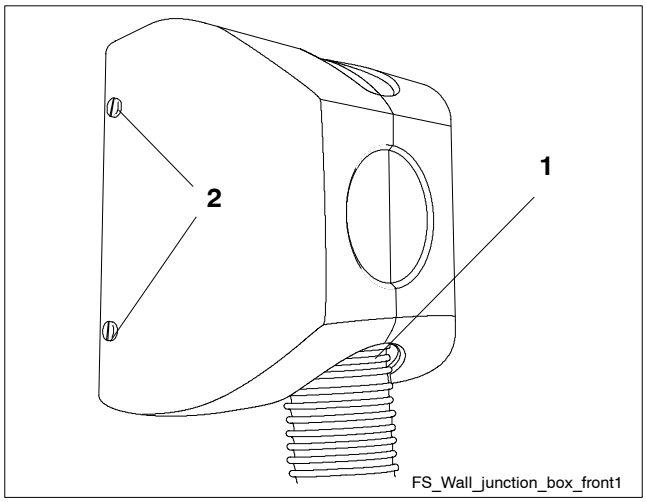
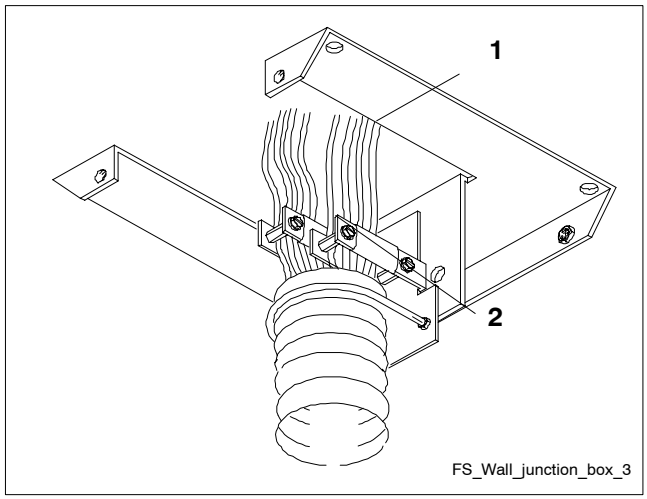
- Cut out the corresponding outlet in the cover **(1)** and mount the cover at the base plate with two screws **(2)** at both sides.

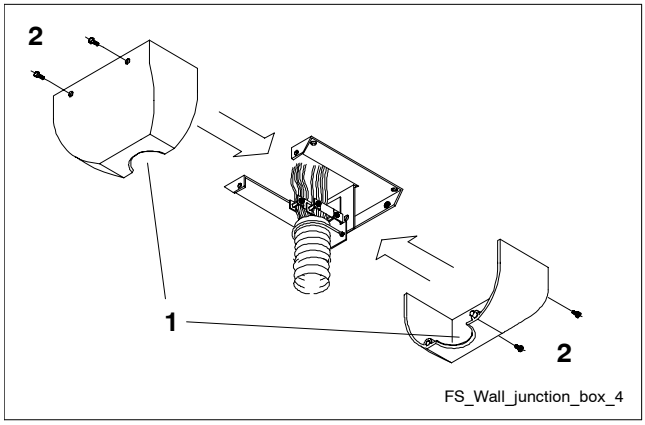


1.2. Ceiling mounting of the wall junction box

- Screw on the base plate **(1)** at the ceiling.
  - Use four screws and dowels.
- Screw on the fixing plate **(2)** with the corrugated hose at the base plate.



- Cut out the corresponding outlet in the cover **(1)** and mount the cover at the base plate with four screws **(2)**.



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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-05971

3-1	(02.0)		
Z-6.1	(01.0)	A4	4512 982 0099.
Z-6.2	(01.0)	A4	4512 982 0099.

Installation wall junction box

1. Installing the wall junction box

- Mount the wall junction box at the place where the generator is intended to be installed.
  (See drawing “Connection of generator” and manual UNIT 4512 103 75380 for wall junction boxes).
- If necessary, install the optional surge arrester WN inside the wall junction box.
  (See surge arrester documentation.)
- If applicable, mount the filler panels of the generator to the wall junction box.
- Have the mains cable present at the clinic connected to mains terminal MEX by a person who is authorized for this job.
- Check the phase sequence of L1, L2 and L3.

⚠ WARNING

Switch OFF the mains supply present at the clinic and make sure that it cannot be switched ON again accidentally.

■

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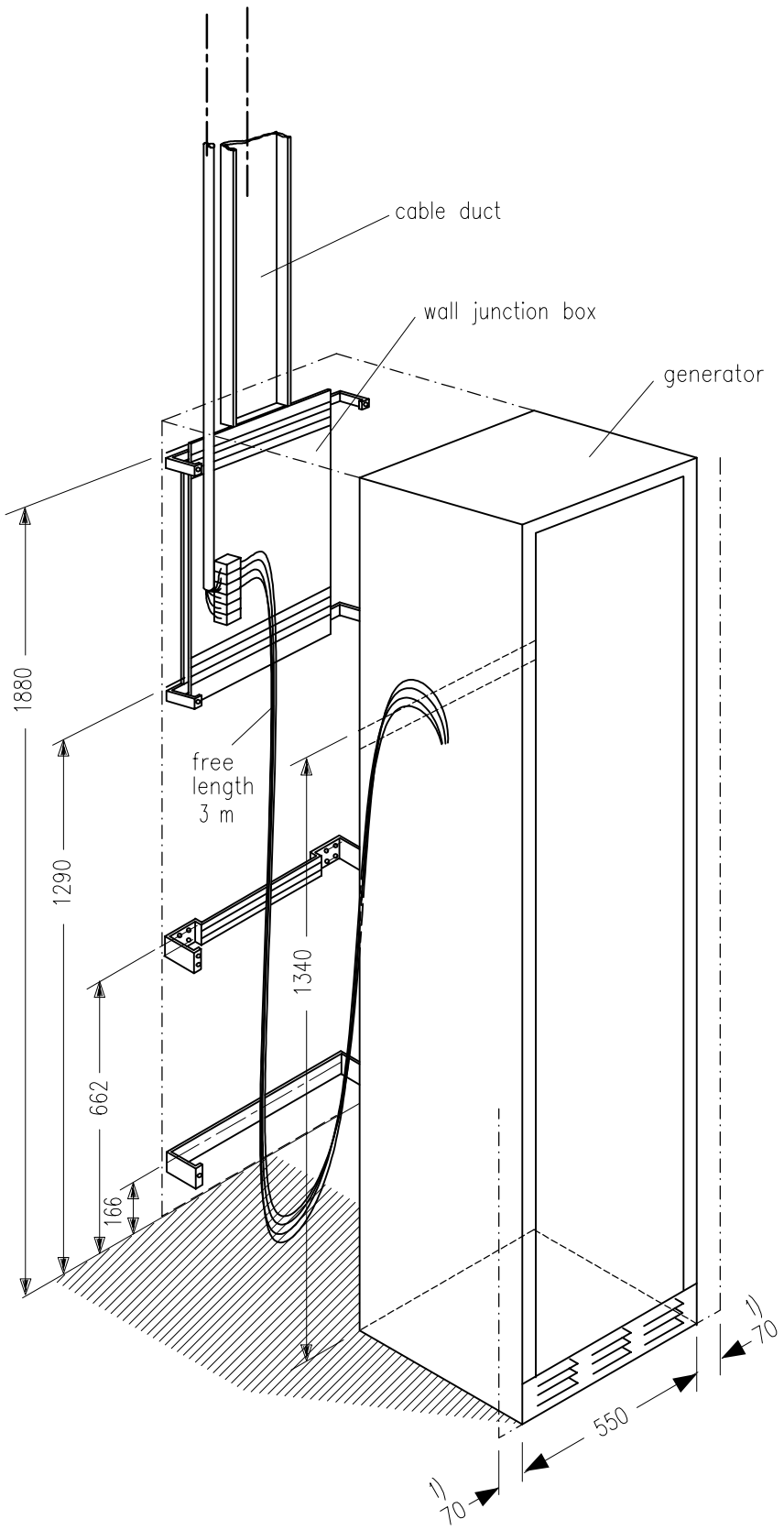

1) Space with no other cabinets beside them.

Connection of generator

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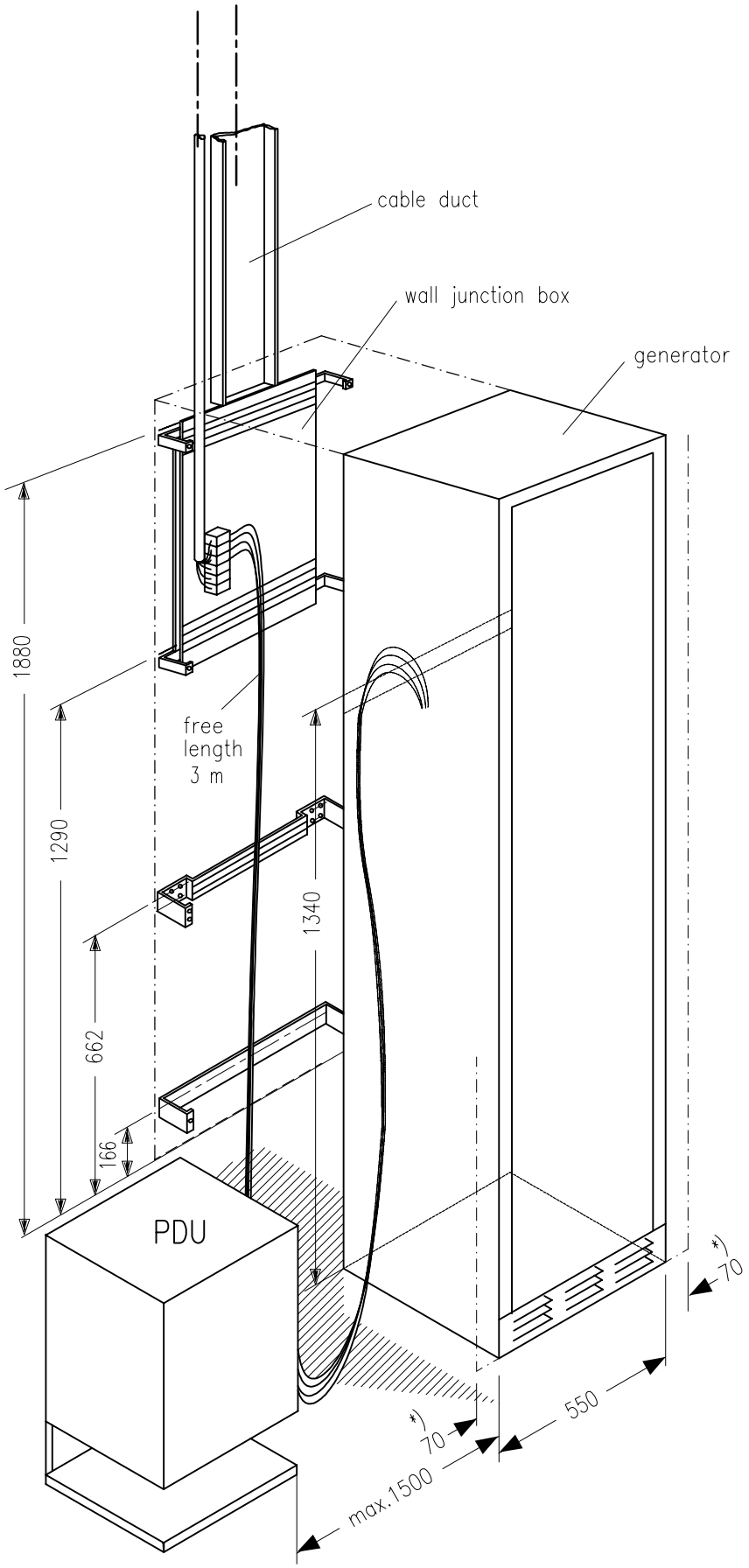

*) Space with no other cabinets beside them.

Connection of generator with Power Distribution Unit (PDU)

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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-05991

3-1...3-7	(03.0)		
Z-1.3	(01.0)	A4	4512 982 0099.
Z1-11.1	(02.0)	A1/A3	4512 983 05521
Z2-5.2	(b/02.0)	A1/A3	4512 983 05511

Installation control desk

Contents

1. Installing the operating panel 3-2
1.1. Desk version 3-2
1.2. Stand version 3-4
1.3. Wall mounted version 3-5
1.4. Supporting angle version 3-6
1.5. Additional release switch 3-7

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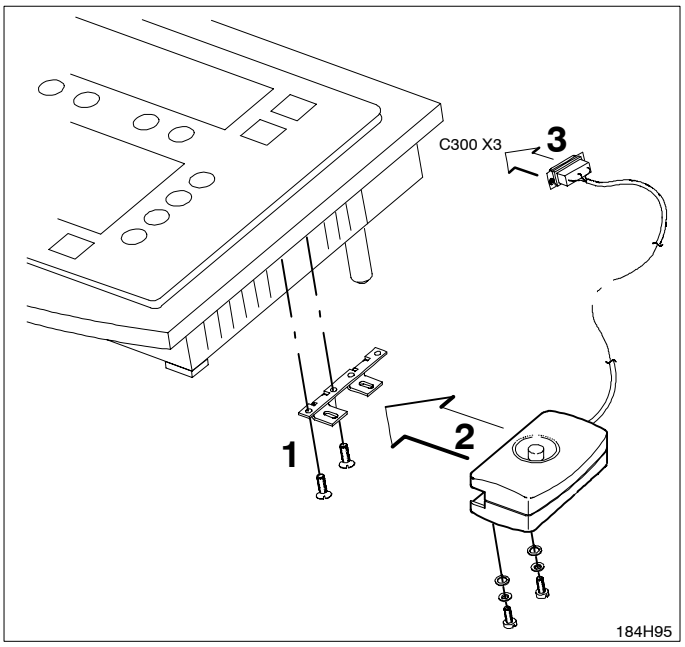
1. Installing the operating panel

1.1. Desk version

See ”Operating panel” Z-1.3.

Accessories:

- 2 feet for the unit
- 2 elastic buffers, black
- 5 insert strips for the RGDV buttons
- sheet with RGDV symbols
- release switch



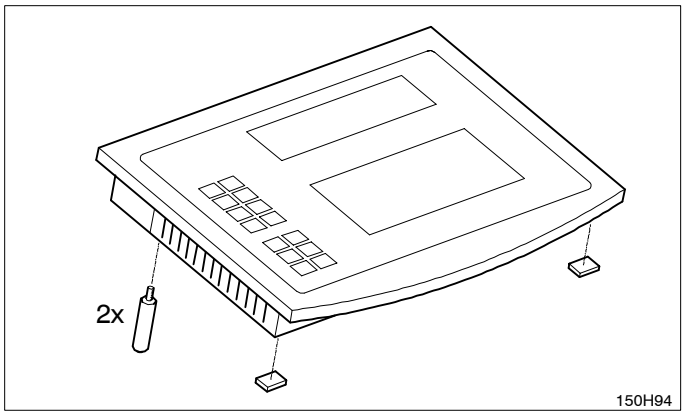
- Unpack the desk carefully.
- Mount the release switch on the left-hand or right-hand side of the desk:

  Mount the holding bracket to the edge of the desk (1) with the two M4x10 countersunk screws.

  For visual reasons the release button should be in line with the +/- buttons on the control desk. Use the appropriate holes in the bracket.

  Slide the release switch onto the bracket.
  Fasten it parallel to the desk edge with the two M4x10 cheese-head screws, securing rings and washers (2).

- Screw in the 2 feet for the unit at the bottom of the desk.
- Glue the 2 black elastic buffers to the front edges of the bottom of the desk such that they are acting as the front feet.



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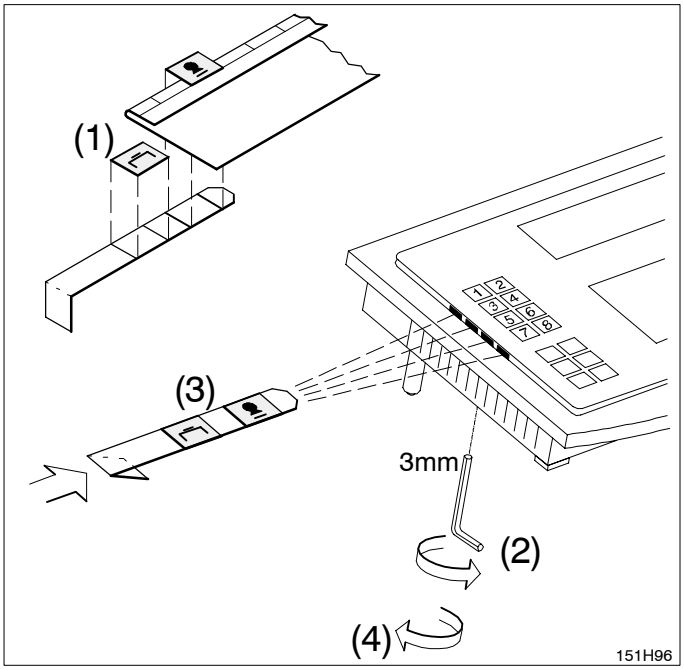
- Define the assignment of the RGDV buttons 1 ... 8. Glue the respective symbols to the insert strips which are provided with subsidiary lines (1).
- Raise the keyboard about 3mm above the desk. Use an allen key (2).
- Push the insert strips under the keyboard foil. Press the angulated, protruding end of each insert strip into the housing of the desk (3).
- Lower the keyboard to its initial position (4).
- Remove the cable cover at the rear side of the desk.
- Connect the cables:



Supply cable	EZX20	<--->	C200X1
	EZX6	<--->	earth
Data cable	EZX46	<--->	C300X1
Release switch		<--->	C300X3
Patient Data Organizer		<--->	C300X2 (option)

- Check the function programming plug for X44 as shown in Z2-5.2 and put it into socket EZX44.
- Provide drag relief for the supply and data cables with the clamp present on the desk.
- Screw on the cable cover.
  Make sure that the cable drag relief device of the release switch (1 cable tie) remains under the cover.

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1.2. Stand version

See ”Operating panel” Z-1.3.

Additional accessories:

- 4 dowels S10
- 4 hexagon cap screws 8 x 60mm
- 4 washers

- Position the desk stand according to the respective room layout.
- Mark the fixing holes on the floor.
- Set the 4 dowels supplied into the floor (drill bit: 10mm).
- Screw on the desk stand with 4 screws and washers.
- Route the supply and data cables from the bottom to the top within the desk stand.
  Provide the cables with drag relief.
  Cable ends including plugs should protrude beyond the edge of the desk by about 500mm.
- Mount the release switch as described in chapter 1.1.
- Assign the RGDV buttons 1 ... 8 to the desired symbols as described in chapter 1.1.
- Connect the cables to the desk as described in previous chapter 1.1.
- Screw on the cable cover.
  Ensure the cable drag relief device of the release switch (1 cable tie) remains under the cover.
- Mount the operating panel on the stand.

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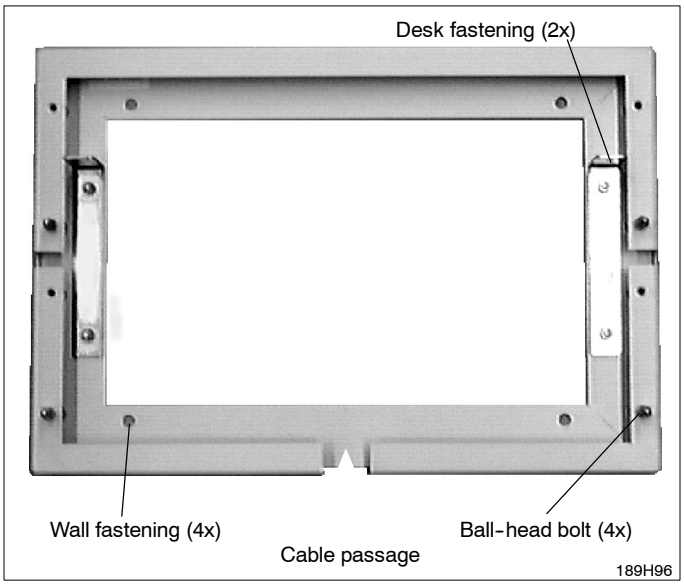
1.3. Wall mounted version

See ”Operating panel” Z-1.3.

Additional accessories:

- 4 ball-head bolts
- 4 dowels S8
- 4 hexagon cap screws 5 x 30mm
- 4 washers
- 2 screws 4 x 10mm
- 2 angle plates
- 4 nuts

- Screw on the angle plates into the wall frame. The short ends of the angles must be pointing upwards.
- Screw the 4 ball-head bolts into the wall support.
- Mark the 4 fixing holes of the wall frame at the respective place on the wall.
- Set the dowels supplied into the wall (drill bit: 8mm).
- Screw on the wall frame with the 4 hexagon cap screws and washers.
- Provide drag relief for the supply and data cables in the wall frame. Cable ends including plugs should protrude beyond the edge of the desk by about 500mm.
- Mount the release switch as described in chapter 1.1.
- Assign the symbols to the desired RGDV buttons 1 ... 8 as described in chapter 1.1.
- Connect the cables to the desk as described in previous chapter 1.1.
- Mount the operating panel on the wall frame and fix it with the left two screws.
- Screw on the cable cover. Ensure the cable drag relief device of the release switch (1 cable tie) remains under the cover.



The wall frame is designed symmetrically.
In case connection cables come from above the frame can be mounted upside down.
Only the ball-head bolts and the angle plates still keep their position.

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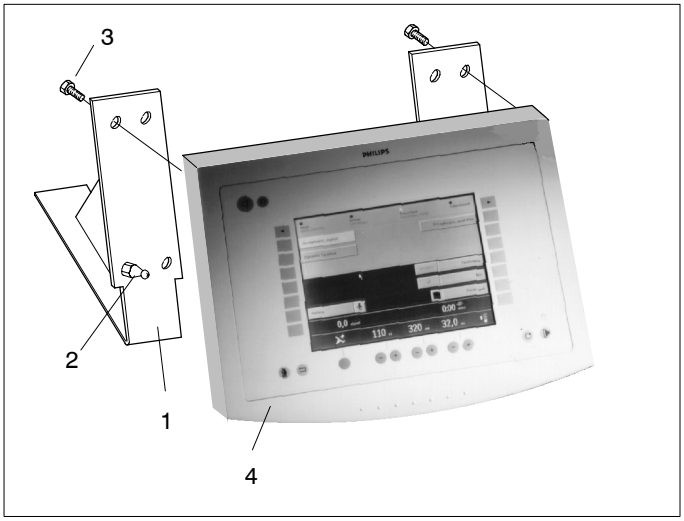
1.4. Supporting angle version

- Screw the ball-head bolts (2) into the supporting angles (1):

  Left angle ---> on the left at the bottom

  Right angle ---> on the right at the bottom

- Press the ball-head bolts (2) into the respective snap bushing of the desk (4).
- Fix the supporting angles (2) to the desk (4) with the 2 screws M4 (3).



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1.5. Additional release switch

An optional second release switch is supplied with a longer spiral cable: 9890 000 0249x

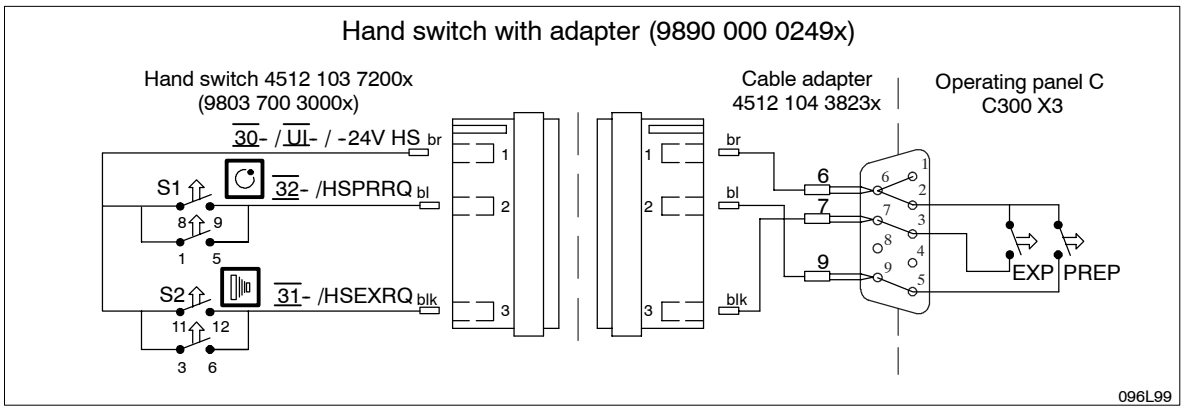
The scope of delivery includes various wall hooks and an adapter cable. Electrical connection is made in parallel with the existing release switch which is mounted on the desk itself.

- To do this, plug the pins of the adapter cable into the D-Sub connector of the existing release switch.

  Sequence:

Adapter: connector pin	<--->	D-Sub: connector pin
1	<--->	6
2	<--->	9
3	<--->	7

Reference: Figure below and drawing Z1-11.1 “Operating panel C”.



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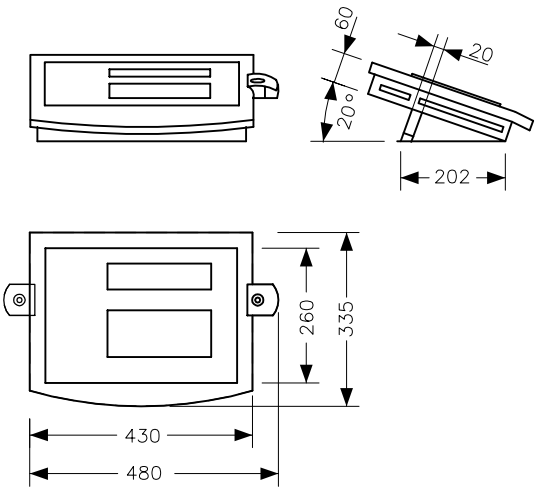
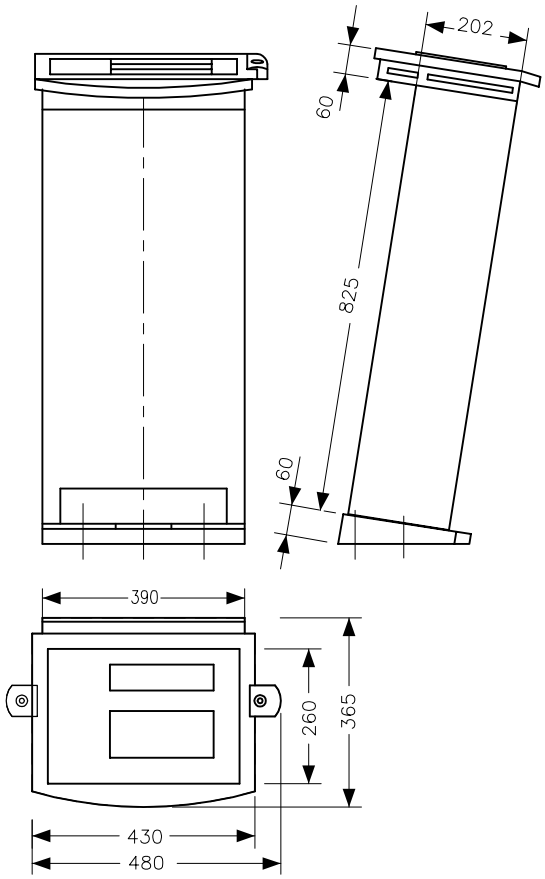
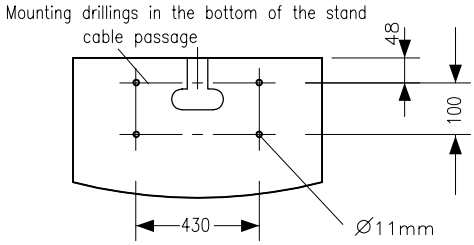
① Low profile control desk



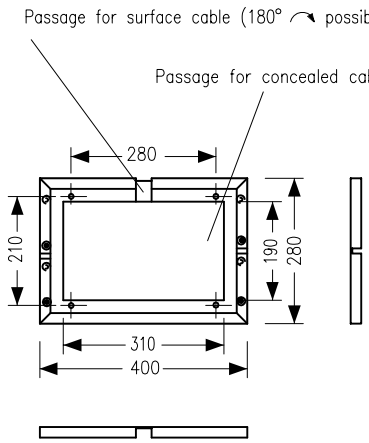
② Stand for low profile control desks

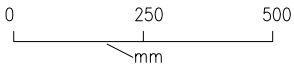


Note:
In this drawing the control desk is shown.
The dimensions are also valied for cockpit CB.



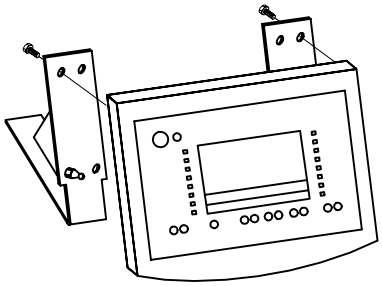
③ Wall-mounting support





④ User interface support

(not possible for digital DIAGNOST)



Product Planning Data

A3 01-11-22 Ost.
4512982009 91_z1_3_010

Operating panel
Mechanical dimensions

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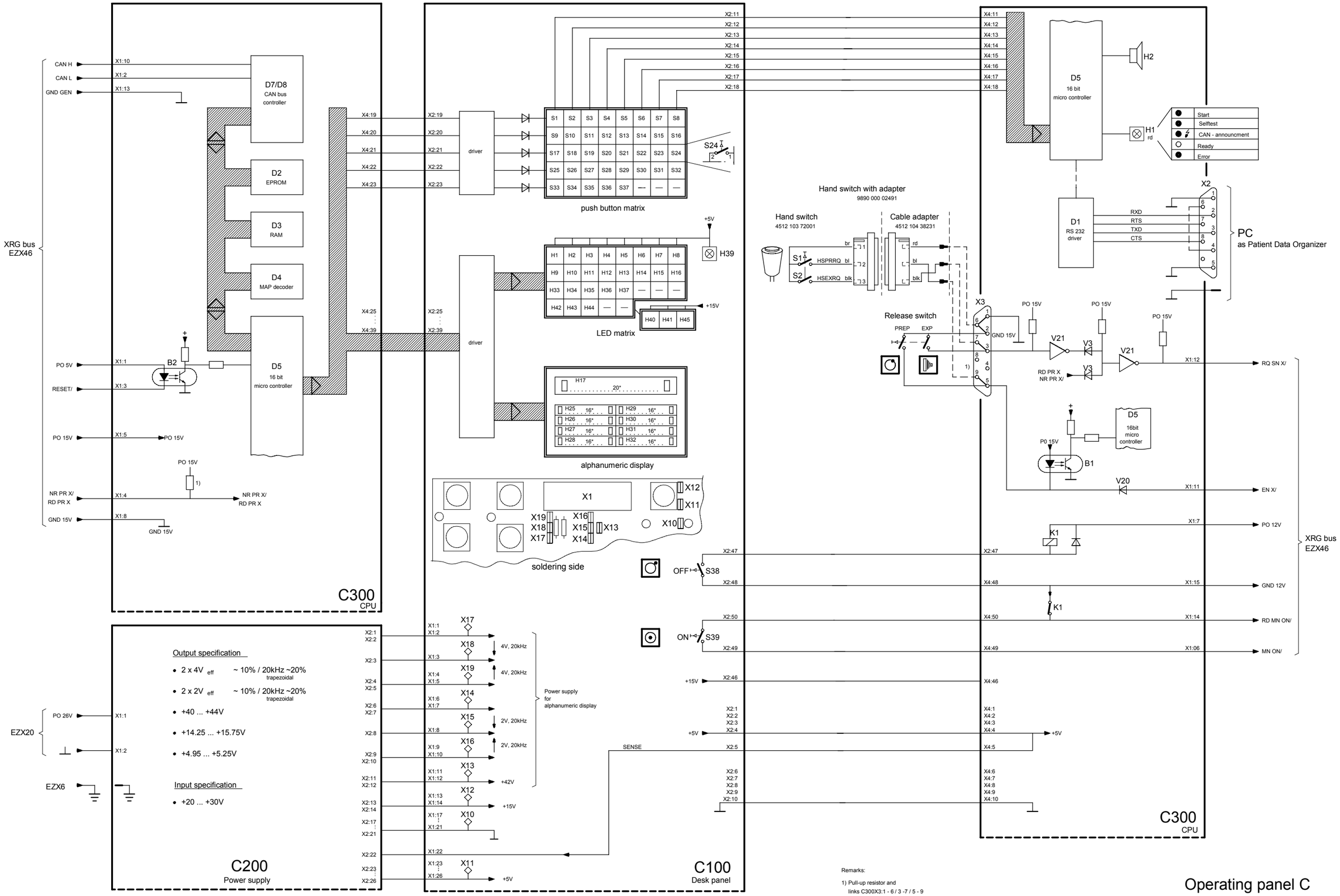

A1/A3 02-08-08 Schr.

Operating panel C

Z1-11.1

4512 983 05521

(02.0)

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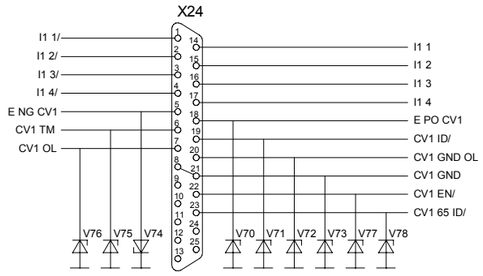
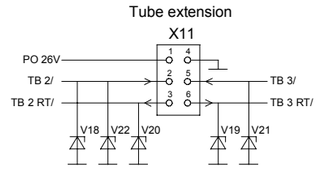
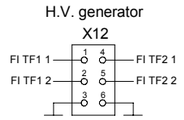
kV power unit EQ



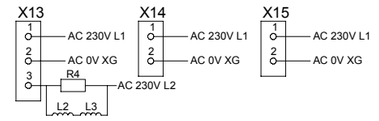
Tube extension



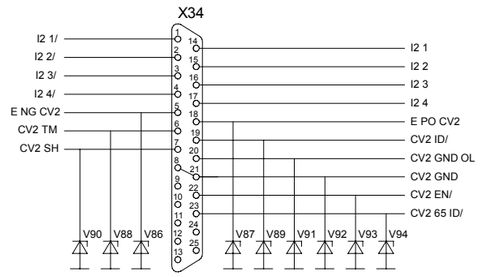
H.V. generator



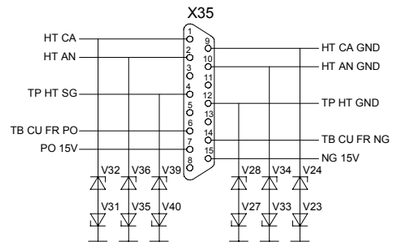
Power supply



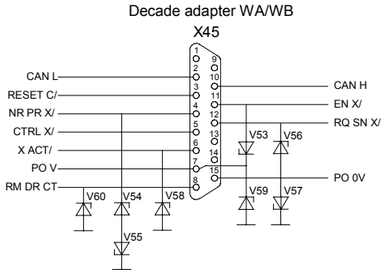
kV power unit E2Q



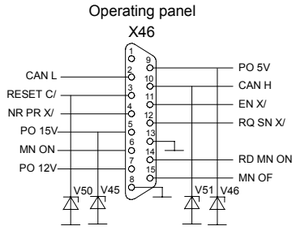
H.V. generator



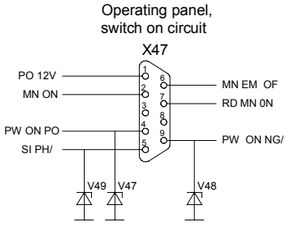
Decade adapter WA/WB



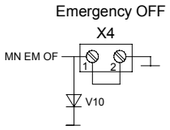
Operating panel



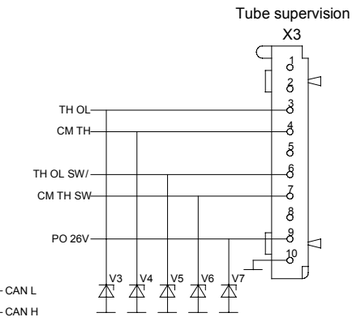
Operating panel, switch on circuit



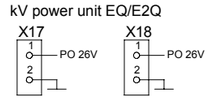
Emergency OFF



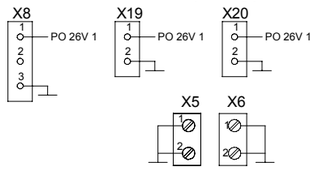
Tube supervision



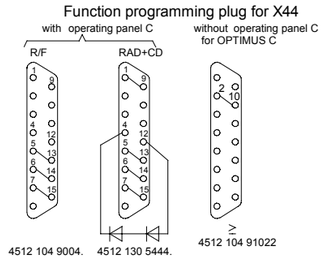
kV power unit EQ/E2Q

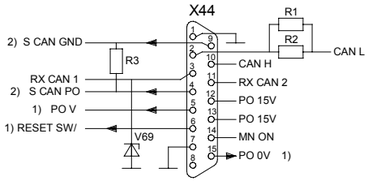


Operating panel



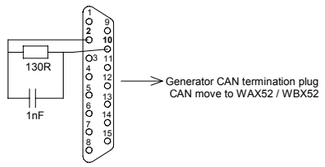
Function programming plug for X44



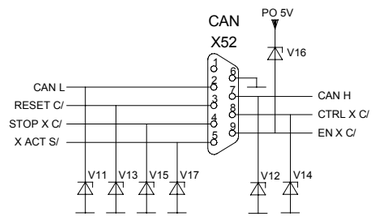


1) To Signal Bus X23
2) To System CAN X43

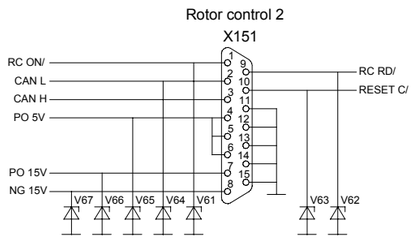
Termination resistor for X45



CAN X52



Rotor control 2



For survey of the components see Z2-5.4

A1/A3 02-03-19 Schr./K6

Backpanel EZ
Basis rack-2 Z
4512 108 0936.

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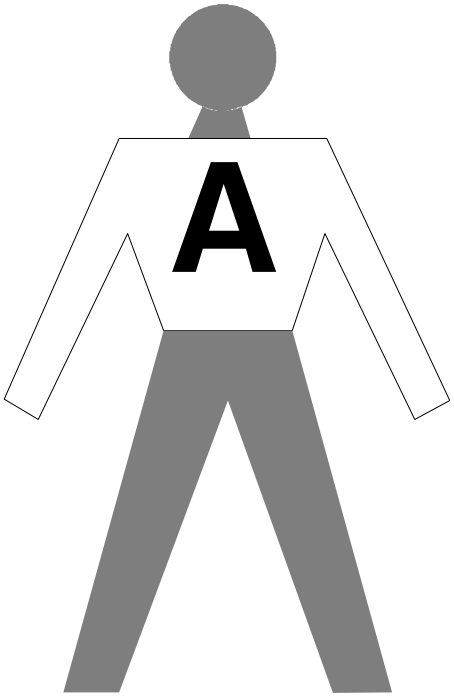
A

LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-02321

3-1...3-7 (04.0)

Installation of BuckyDiagnost VE/VT, VE2/VT2

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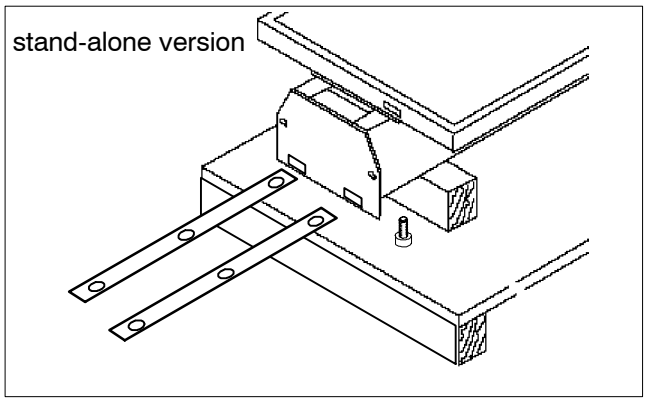
1. Preparation

- Unpack the parts.
  - Check all parts for damage.
- Place the BuckyDiagnost VE / VT at the installation position. See room layout plan.
- Remove the red painted parts of transport safeguard. They are not used any more.
- Move the bucky unit to a position so the rope is tense.

1.1. Preparation of a stand-alone Version

If there is a stand-alone version of the BuckyDiagnost VE / VT insert the nut-lines and fix each with a bolt. They are used to fasten the support triangles to the column.



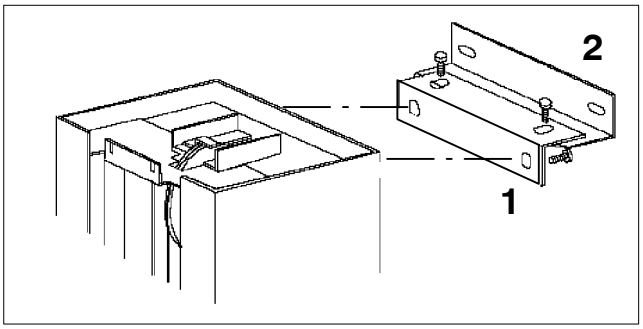
- Erect the BuckyDiagnost VE / VT.

⚠ WARNING

Secure the BuckyDiagnost VE / VT against tilting.

1.2. Preparation of a Wall Stand Version

- Exchange the screws at the angle **1** for two sockethead cap screws with washers supplied.
- Screw the wall fixing angle **1** and the angle **2** together with two sockethead cap screws **M8x12** and washers supplied.



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2. Installation

2.1. Mounting Place for BuckyDiagnost VE / VT

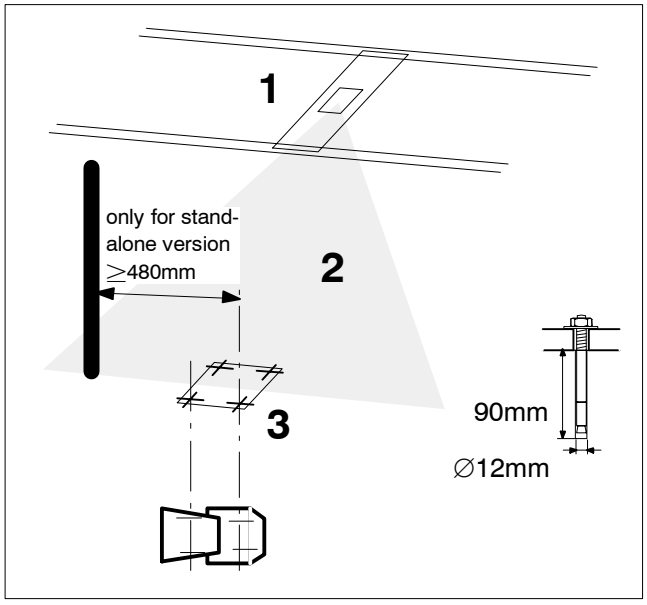
- Refer to local room layout plan for position of VE/VT (Room layout is provided by the customer).
- Drill holes ∅**12mm** about **90mm** deep in the middle of the marked area of the four fixing points.

Laser alignment tool (CS 2/4 only):

- Center the laser alignment tool **1** between both ceiling rails.

A laser beam **2** marks the centre line **3** of bucky unit.

Take the appropriate BuckyDiagnost VE/VT - template out of section 1 “Introduction, tools, room check”, module “Templates BuckyDiagnost wall stand”



NOTE

There are 3 different templates. Choose the appropriate one for this application.

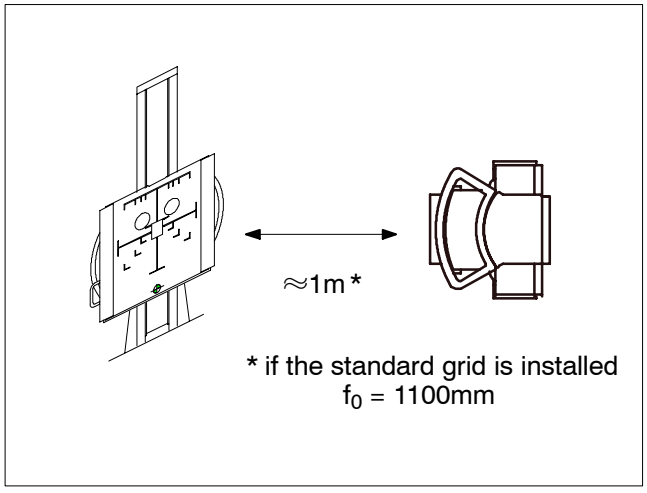
- Place the template in line to the centre line.
  - Fix template.

Note:

For a stand-alone version of BuckyDiagnost VE / VT respect minimal distance to the wall for freely movement of a established ceiling suspension, if the corrugated hose risks an collision.

2.2. Conventional Installation in a BuckyDiagnost system

- Determine the working position of BuckyDiagnost CS2 / CS4 or BuckyDiagnost FS to BuckyDiagnost VE / VT.
  - Insert a catch plate into the longitudinal rail(CS) resp. floor rail (FS) to the catch pin, if necessary insert a catch plate into the transversal rail of the ceiling suspension too.
- For positioning of drill holes the template for BuckyDiagnost VE/VT can be used.



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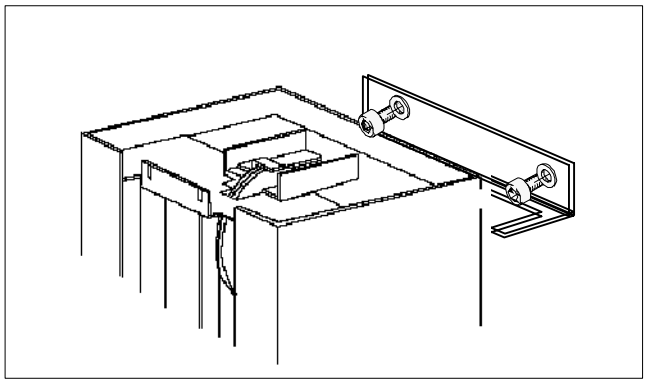
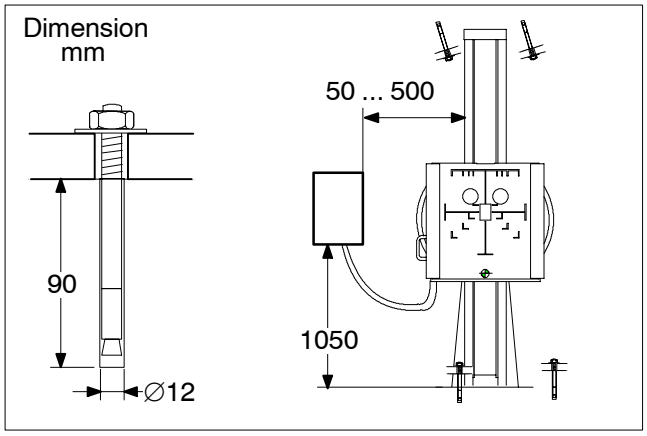
2.3. Wall Stand Installation



- Mark holes at the wall and drill the holes for the supplied **10mm** dowels.
- Fix the column at the wall with **2x** hexagon screws and washers.
- Check level of the column with a spirit level or use the dual laser alignment tool, use spacer if necessary.
- Fasten all bolts.
- Check the easy movement of the bucky unit.
- Install the wall connection box with supplied **8mm** dowels, screws and washers.



Respect the location of the connection box as shown in the figure.

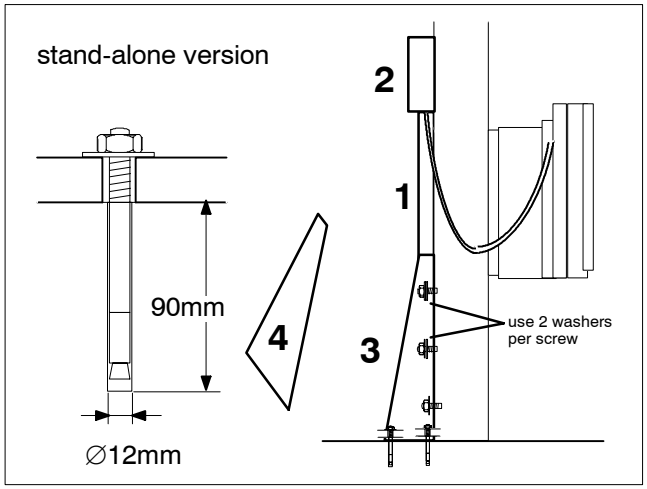
- Align the wall stand to the middle of the longitudinal axis of the BuckyDiagnost TH.
  - Use a plummet dropped from the ceiling as reference point.
- Mount the BuckyDiagnost VE / VT.
  - Mark the four fixing points at the floor.
  - Drill the holes for the dowels.

NOTE

Dowels are not included in the accessory kit.
Supply it locally.

  - Insert the four anchor dowels into the holes.
  - Fix the BuckyDiagnost VE / VT at the floor with the screws and washers supplied.

2.4. Stand-alone Installation



- Install the cable conduit **1**.
- Stick the connection box **2** to the column.
- Install the support triangles **3** at the rear side of the column by fixing it to the nut-lines.
- Mark the holes at the triangle on the floor and drill the holes for the dowels.

NOTE

Dowels are not included in the accessory kit.
Supply it locally.

- Fix the triangle at the floor with the screws supplied.
- Fasten all bolts.
- Route the cable to the connection box.
- Install the cover **4** on the triangles **3**.
- Check the easy movement of the bucky unit.

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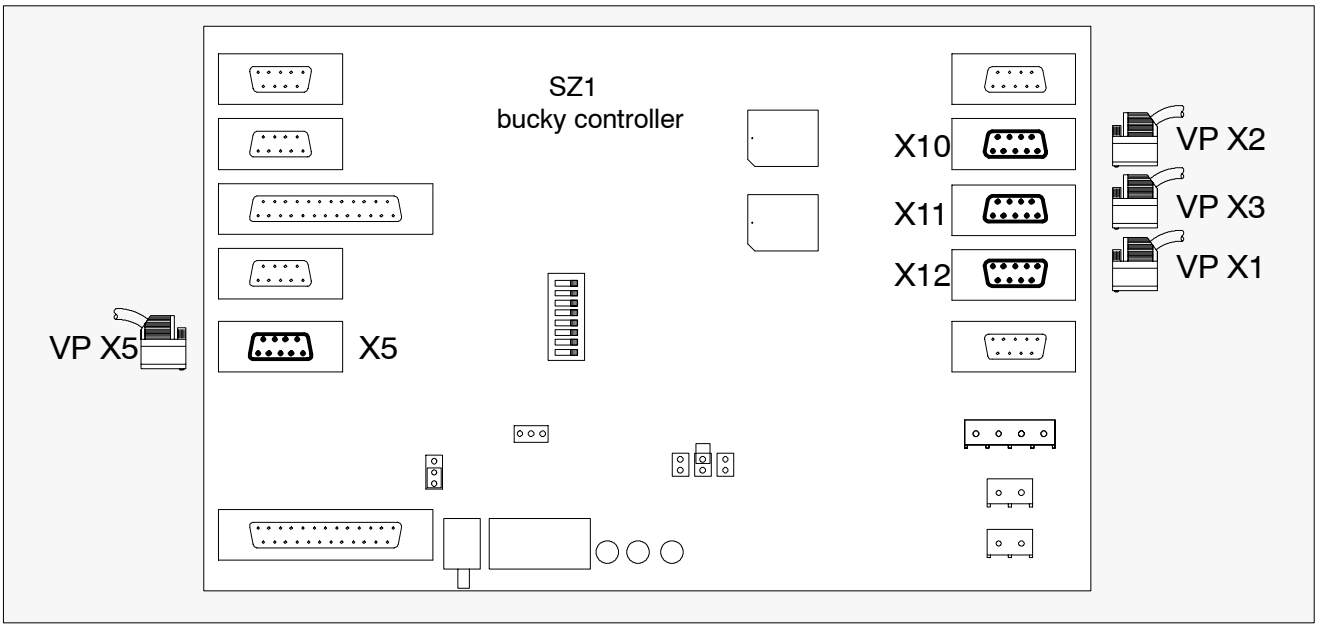
3. Connection of BuckyDiagnost VE / VT to bucky Controller or Segment control unit

- Connect the named cables to the bucky controller as shown in the figure.



Functions of:

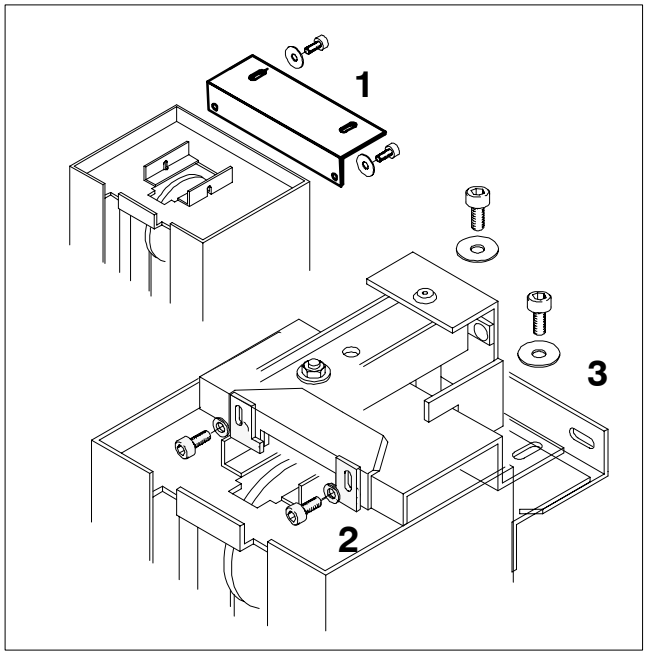
VP X1 – SZ1 X12	Exposure release of VE / VT	VP X3 – SZ1 X11	Tilt function of VT
VP X2 – SZ1 X10	Format sensing cassette of VE / VT	VP X5 – SZ1 X5	Tracking of VE / VT

Case 1 : Segment control unit is located close to the generator

Case 2 : Segment control unit is located close to the wall stand (no VP box will be needed!)

3.1. Preparation with BABIX Suspension Gear (option)

- Attach the BABIX suspension gear to the top of the column as shown in the drawing.
  - Screw the angle **1** to the wall stand top.
  - Insert the two plates **2**.
  - Screw the suspension gear to the plates **2** and the wall angle **3** (this item is needed for a wall stand version only, do not install for a stand-alone version).



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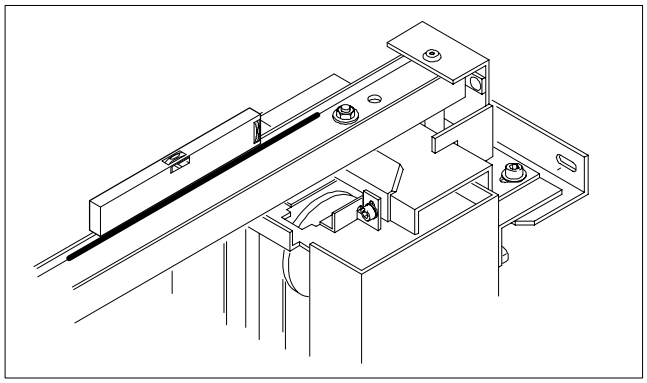
Adjustment of the arm can be made after mounting the BuckyDiagnost VE / VT

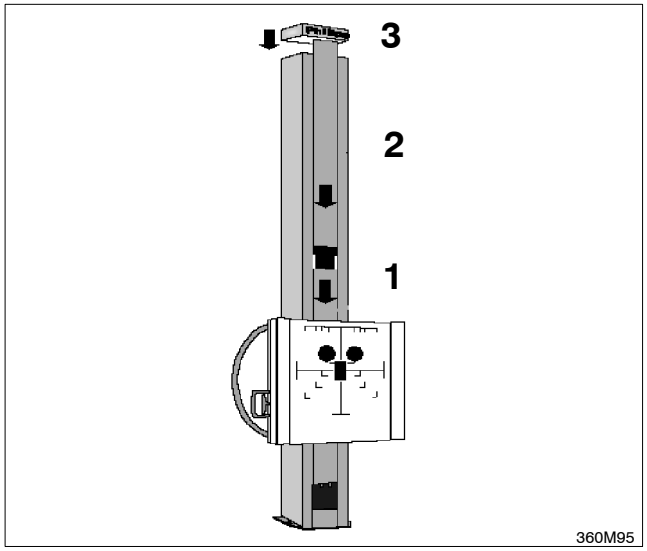
- Adjust the arm of the suspension gear
  - Loosen the screws of the angle just a little bit.
  - Adjust the arm for a horizontal position, use a spirit level.
  - Tighten the screws of the angle.



4. Installation of the Covers

Install cover after checking the BuckyDiagnost system.

- Insert the lower cover **1** through the polyamide guides at the carriage and push it into the support.
- Insert the top cover **2** into the guide bolts and fasten the nuts at the stay bolts on the top.
- Install the top cover panel **3** with Philips brand name.



5. Installation of Accessories

The accessories can be ordered separately.

5.1. Patient Armrests

- Install the armrests to the left and right hand side of the bucky unit with two screws each.

5.2. Patient Stretching Rest

- Install the stretching rest to the left or right hand side of the bucky unit.

5.3. Installation of Additional Counterbalances

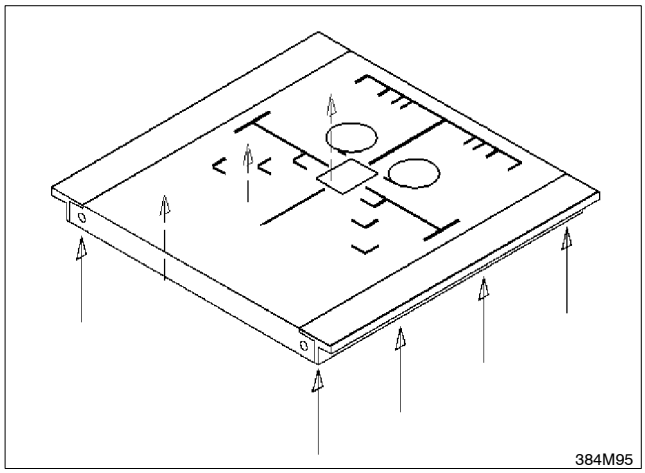
These works have to be done if accessories are added after a new customer order.

Version VE

- Re-install the bucky unit.
- Remove the four additional counterweights.
- Install the bucky unit again.

Version VT

- The counterweights are placed in the lengthwise carrier opposite side of the brake handle.
- Open the cover at the lengthwise carrier and remove the additional counterweights .



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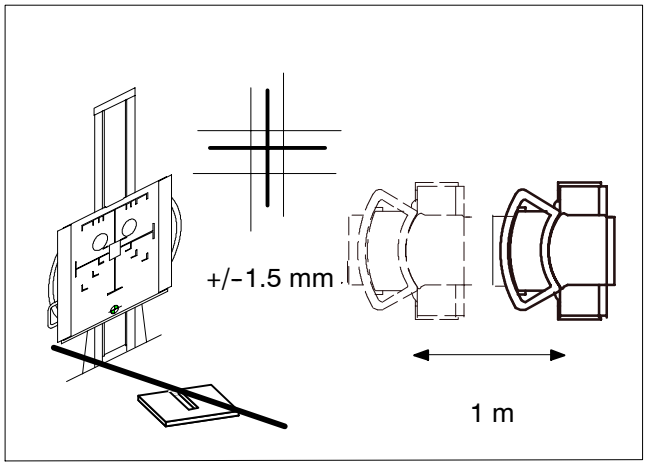
6. Alignment of BuckyDiagnost VE / VT in a BuckyDiagnost system

6.1. Alignment to BuckyDiagnost CS2 / CS4, FS

- Swing the tube housing assembly towards the bucky unit.
- Place a mirror on the front plate.
- Switch on the field illuminator.
  - Check the alignment.
- Move the tube by **1 m** in longitudinal direction.

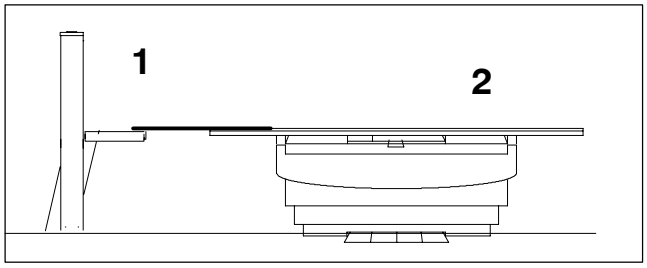
The migration of the cross-hairs to the vertical line of the bucky unit must not exceed **+/-1.5 mm**.

- Align the column rectangular with respect to the beam axis, use spacer if necessary.



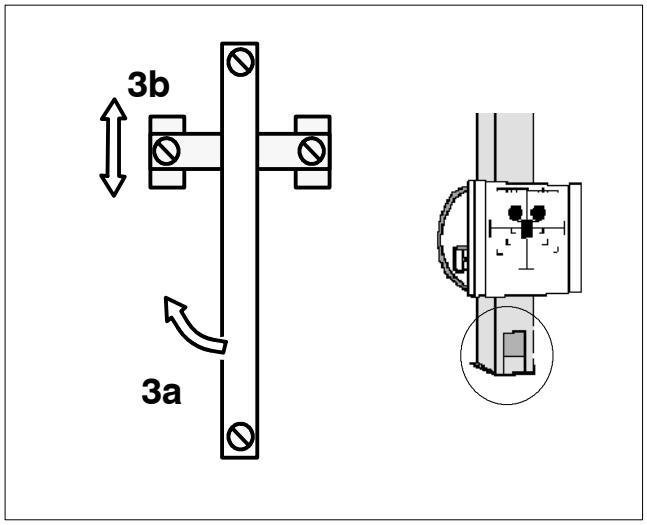
6.2. Switch adjustment of BuckyDiagnost VT

In 90° position the bucky unit **1** should be adjusted to the same floor distance as the bucky unit in the table **2**.



- Tilt the bucky unit to the 90° position and adjust the floor distance (VPS1) at the switch element **3** via loosening screws.
  3a = wide adj (swing of 180°)., **3b** = fine adj.

- Fasten screws.



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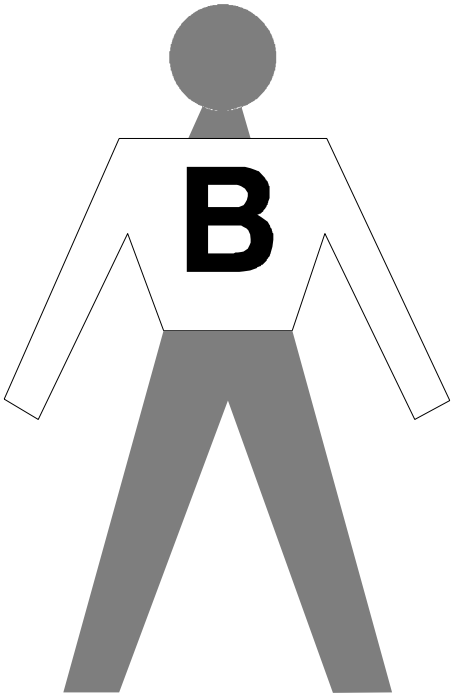

B

LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-05981

3-1 ... 3-3 (02.0)

Preparatory work

1. Preparatory work

1.1. Mounting of the H.V. generator in the cabinet

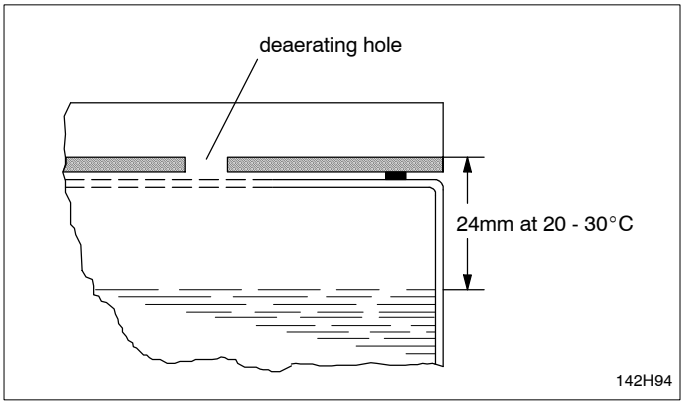
CAUTION

Do not tilt the H.V. generator while transporting it.

In case of a tilting angle larger than 45°, the setting-to-work of the generator can be started not before a waiting time of about 8 hours has passed. Otherwise the H.V. generator may be destroyed by electrical sparkover.

- Unpack generator cabinet E.
- In case the packing material is strongly soiled with oil check the oil level. Repair it if necessary.

  Tolerance: ±2mm
  Oil: Shell Diala G in 2.5l container
  4512 148 43172



- Remove the deaerating screw completely from the cover of the H.V. generator. Only this way the precision of the high voltage measuring divider corresponds to the specification.
  In case of return shipment of the H.V. generator this screw must be fixed again. Therefore, keep the screw laying on top of the cover.

CAUTION

Make sure that no foreign matter falls into the oil. Otherwise the transformer must be exchanged.

- Take the two transport bars from the rear side of the cabinet.
- Lift the H.V. generator into the generator cabinet with the transport bars.
  The 4 connecting bolts GX1001 to 1004 must point at the front of the generator cabinet.

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1.2. Electrical connection of the H.V. generator

- Connect the H.V. generator electrically:

Generator version	Connection			Remark
	from	<--->	to	
50/65/80kW	E1 (GND)	<--->	GX1100 (GND)	Ground
	ZX12	<--->	G100X15	Route the cables along the front and left-hand edge of the H.V. generator. Fix them.
	ZX35	<--->	G100X14	
50kW	QC13:1	<--->	GX1003	Twist the cables! **Note** *The sequence of the connecting bolts is not in numerical order.* *See drawing page 1-3.* Push the screening cap forward over the connecting bolts and tighten it. Attach the converter cables including the screening to the screening cap with cable ties.
	QC03:1	<--->	GX1002	
	GX1001	<--->	GX1003	The 50kW version might have direct links on each side or a link on one side and a choke of 1 ... 6 loops on the other side for the reason of kV symmetry. **Note** *Do not change these links or chokes.*
	GX1004	<--->	GX1002	
65/80kW	QC13:1	<--->	GX1001	Twist the cables! **Note** *The sequence of the connecting bolts is not in numerical order.* *See drawing page 1-3.* Push the screening cap forward over the connecting bolts and tighten it. Attach the converter cables including the screening to the screening cap with cable ties.
	QC03:1	<--->	GX1002	
	2QC13:1	<--->	GX1003	
	2QC03:1	<--->	GX1004	
50/65/80kW 2^{nd} tube	WGX61	<--->	GK1:1	
	WGX67	<--->	GK1:2	
	WGX62	<--->	GK2:1	
	WGX68	<--->	GK2:2	

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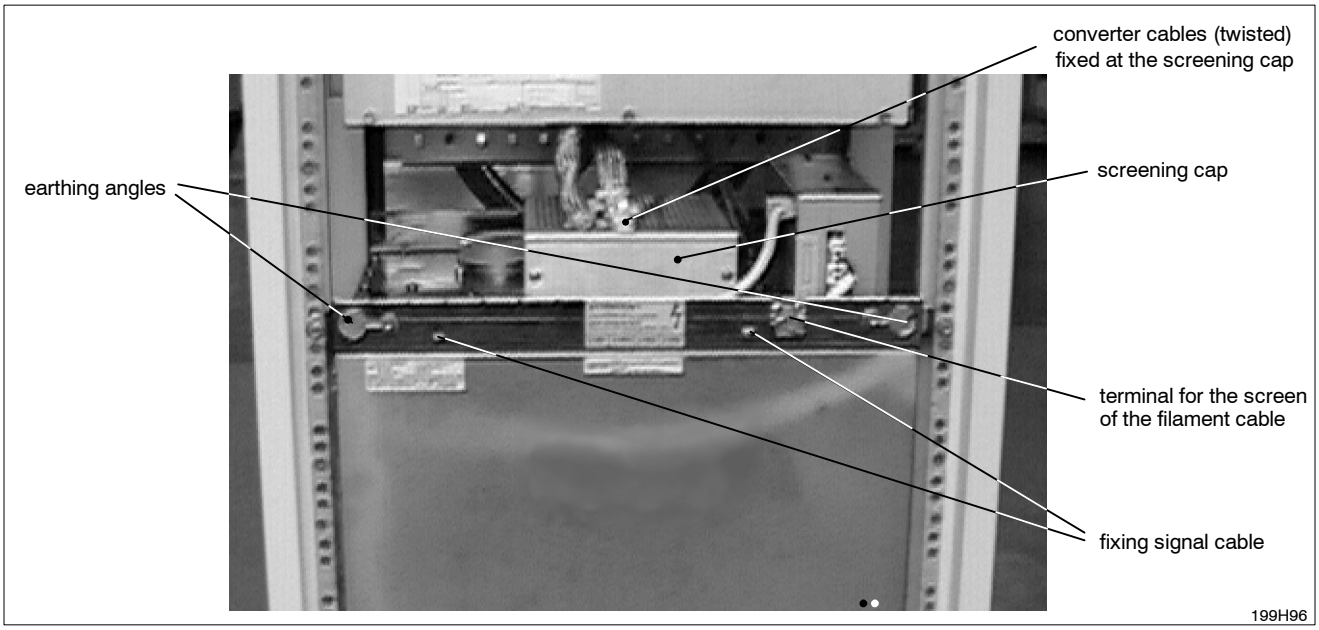
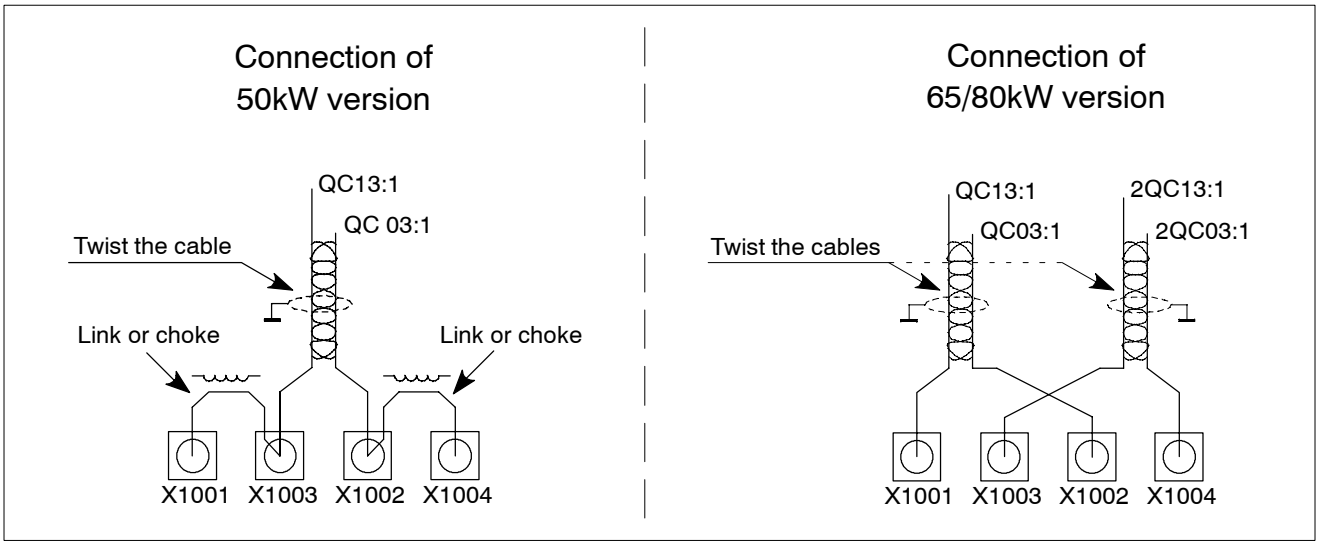
- Turn the two earthing angles of the H.V. generator outward and screw them on to the members of the cabinet.





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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06081

3-1...3-12	(02.1)		
Z1-1.2	(97.0)	A1/A3	4512 983 05751
Z1-2.1	(97.0)	A2/A3	4512 983 05761
Z1-2.1.1	(02.0)	A2/A3	4512 983 05951
Z1-2.2	(97.1)	A2/A3	4512 983 05941
Z1-2.2.1	(02.0)	A2/A3	4512 983 05961
Z1-6	(02.0)	A1/A3	4512 983 05531
Z1-14.1	(b/98.0)	A2/A3	4512 983 05541
Z1-14.2	(c/97.1)	A1/A3	4512 983 05551
Z1-15.1	(97.0)	A1/A3	4512 983 05571
Z2-5.2	(b/02.0)	A1/A3	4512 983 05511

Electrical connection

Contents

1. Electrical connection 3-2
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1.2. Mains connection 3-2
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1.3. Stator connection 3-3
1.3.1. Shielding 3-3
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1.4. Signal cables 3-7
1.4.1. Room decade cable 3-7
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1. Electrical connection

1.1. Earthing

See ”Earthing diagram” in section 4.

1.2. Mains connection

1.2.1. Mains connection of the generator

⚠ WARNING

Switch OFF the mains supply present at the clinic and make sure that it cannot be switched ON again accidentally.

See ”Connection diagram” in section 4.

- Measure the internal mains resistance at the terminal MEX with a suitable measuring instrument.

  L1 - L2: R_i = ... mΩ
  L1 - L3: R_i = ... mΩ
  L2 - L3: R_i = ... mΩ

  Required max. mains resistance at generator input:

Mains voltage	Mains resistance		
	30kW	50kW	65/80kW
190V *	–	40mΩ	–
220V *	130mΩ	60mΩ	–
240V *	160mΩ	80mΩ	–
380V	500mΩ	300mΩ	200mΩ
400V	500mΩ	300mΩ	200mΩ
440V	500mΩ	350mΩ	240mΩ
460V	500mΩ	350mΩ	240mΩ
480V	500mΩ	400mΩ	300mΩ

  ***** with external mains transformer (max 50kW)

  Maximum permissible internal mains resistance: 500mΩ

CAUTION

Connect phase wires in correct phase sequence.

- Connect the mains cable of the generator to terminal MEX: L1 / L2 / L3 within the wall connection box. If the optional surge arrester WN is fitted, connect the cables at that point to terminal WNX1100.
- Connect the examination unit supply (max. 5A) to terminal MEX: T1 / T2 / T3.

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1.3. Stator connection

1.3.1. Shielding

CAUTION

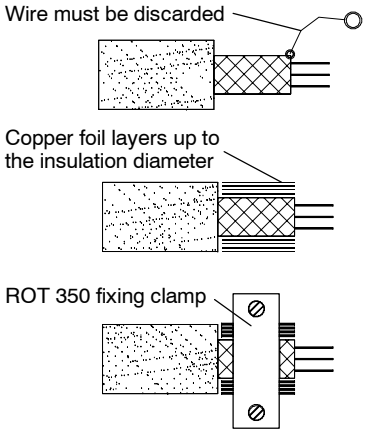
To suppress interferences of the high-speed rotor control, the stator connections must be provided with a 360 ° screen at the tube and generator end.

General remarks:

- Always use screened cables: 0722 215 02054.
- Shorten the stator cable to the required length. Do not accommodate excess lengths at the generator.
- Keep stator cable separate from all the other signal cables to avoid interference.
- Earth the screen at both cable ends.

Screening procedure:

- Remove any enamel or dirt from the clamp providing drag relief in the tube housing to make sure the clamp is conductive.
- Remove the plastic covering around the clamp, about 1cm (0.5”).
- Wrap copper foil around the visible screen of the cable until the original diameter of the cable is obtained.
- Remove the present red wire going from the screen end to the earthing point of the tube housing.
- Fix the screen of the stator cable with the clamp. Ensure that the clamp is secured and the ground contact works!



Screening of the stator cable. 327H97

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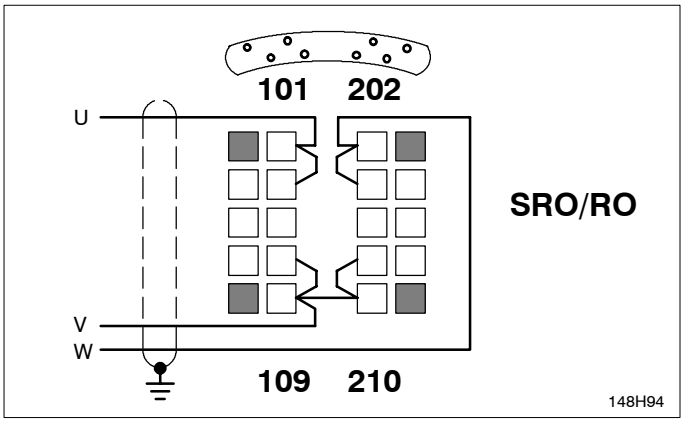
1.3.2. Connection

CAUTION

Do not mix up the phases, otherwise components of the rotor control may be destroyed.

At the tube end

- Place the jumpers across terminals 100 and 200 according to the figure.



- Connect the stator cable:

  wire 1 ---> phase U
  wire 2 ---> phase V
  wire 3 ---> phase W

- Earth the screening of the stator cable at the tube housing with the metallic clamp.

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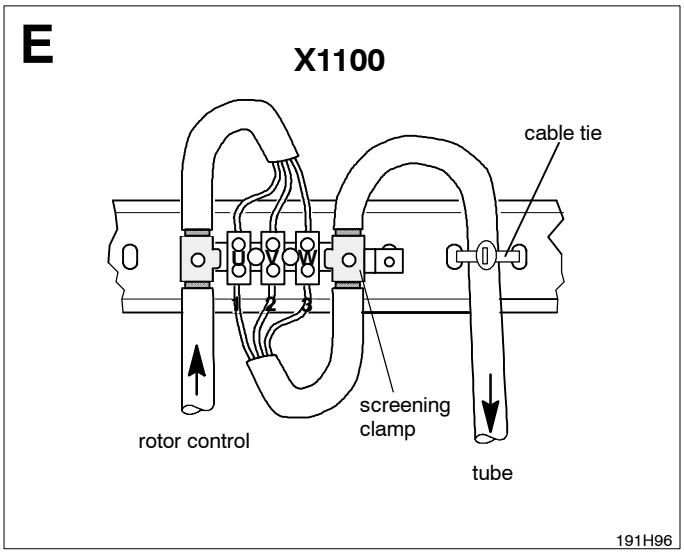
At the generator end: One-tube version

See ”Connection diagram” in section 4.

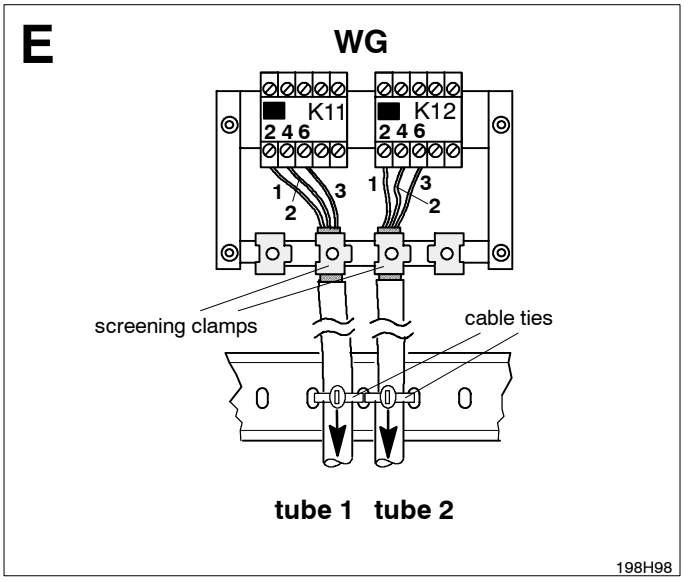
- Connect the stator cable to the terminal EX1100 (U-V-W).
- Check the stator connection by measuring the resistances:
  U – V = wire 1 – 2 ≈ 11Ω
  U – W = wire 1 – 3 ≈ 20Ω
  V – W = wire 2 – 3 ≈ 9Ω
- If an inductance meter is available, measure the following inductance values:
  U – V = wire 1 – 2 = 57mH ±10%
  V – W = wire 2 – 3 = 34mH ±10%
- Fix the screen below the screening clamp.
- Relieve the tension of the stator cable by a cable tie.



At the generator end: Two-tube version

See ”Connection diagram” in section 4.

- Connect the stator cables to the terminals EWG:K11/K12.
- Check the stator connections of both tubes by measuring the resistances:
  U – V = wire 1 – 2 ≈ 11Ω
  U – W = wire 1 – 3 ≈ 20Ω
  V – W = wire 2 – 3 ≈ 9Ω
- If an inductance meter is available, measure the following inductance values:
  U – V = wire 1 – 2 = 57mH ±10%
  V – W = wire 2 – 3 = 34mH ±10%
- Fix the screen below the screening clamp.
- Relieve the tension of the stator cables by cable ties.



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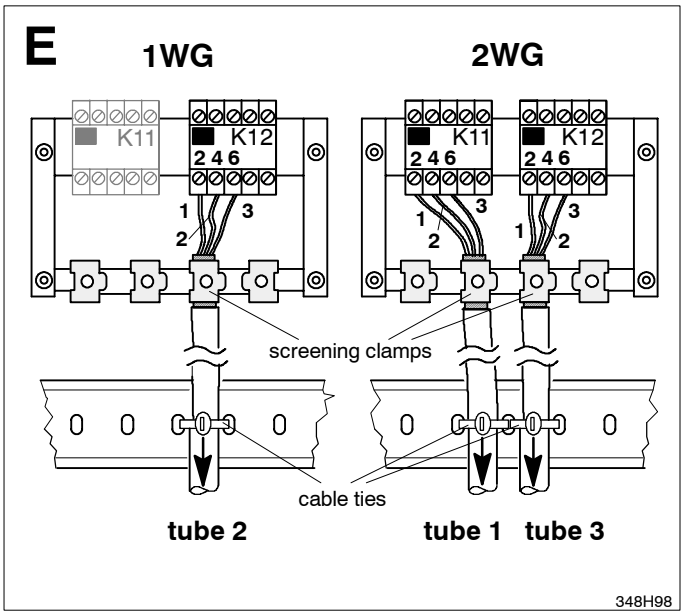
At the generator end: Three-tube version

See ”Connection diagram” in section 4.

- Connect the stator cables to the terminals E1WG:K12 and E2WG:K11/K12.
- Check the stator connections of all 3 tubes by measuring the resistances:
  U – V = wire 1 – 2 ≈ 11Ω
  U – W = wire 1 – 3 ≈ 20Ω
  V – W = wire 2 – 3 ≈ 9Ω
- If an inductance meter is available, measure the following inductance values:
  U – V = wire 1 – 2 = 57mH ±10%
  V – W = wire 2 – 3 = 34mH ±10%
- Fix the screens below the screening clamps.
- Relieve the tension of the stator cables by cable ties.



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1.4. Signal cables

See: – ”Connection diagram” in section 4.
– Z1–6 ”Basic interface”.

1.4.1. Room decade cable

- Connect the door switches at the generator:

  EZX1: 8 <---> switch <---> 10

  In case no switch is present
  link: pin 8 <---> pin 10

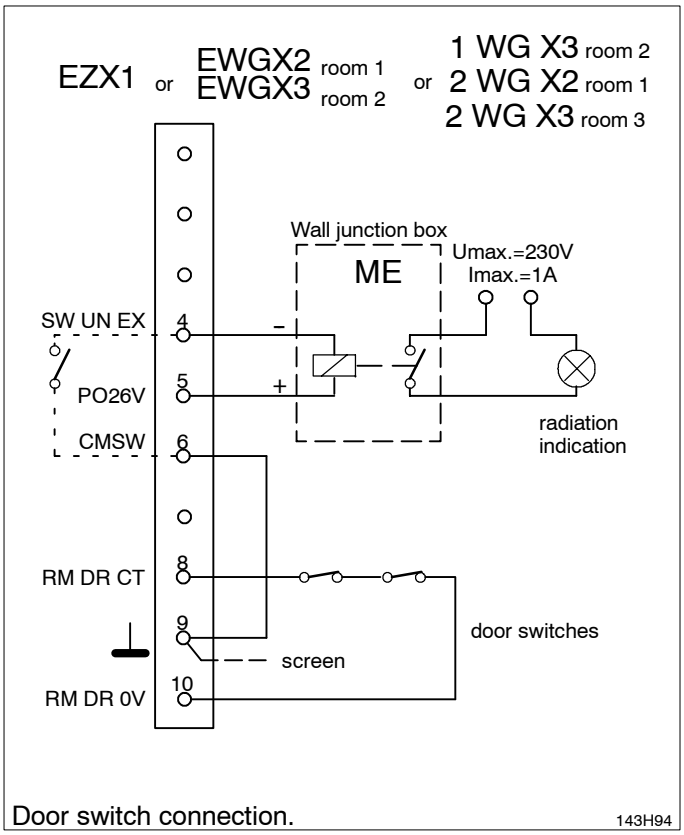
EZ150 K1:

max. switching and loading current = 1A

max. Load = 60VA AC
= 30W DC

CAUTION

Make sure the polarity of the relay is correct.



Door switch connection. 143H94

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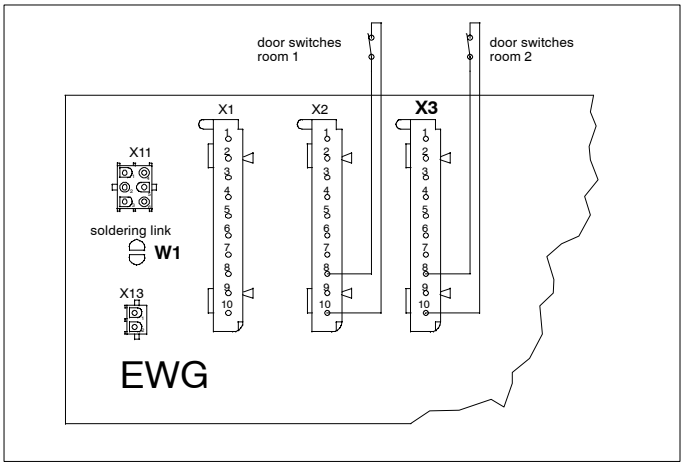
- In case of tube 2 or 3 is located in room 2 or 3 or while room decades

  - WG X3 or
  - 1WG X3 or
  - 2WG X3

  are intended to be used for room supervision the soldering link WG W1 must be placed.
  Only when this link is placed it is guaranteed that relay WG K3 pulls up and room decade WG X3 is activated when switch-over of the tube takes place.

  See Z1-14.xx "Tube extension".



- If needed connect an external relay for each examination room to control external radiation warning devices.

  One relay inclusive cable is part of delivery,
  Additional ones can be ordered: 4512 100 4523.

  A mounting place is reserved on the mains connection terminal MEX of the wall junction box.

CAUTION

Make sure the polarity of the relay is correct.

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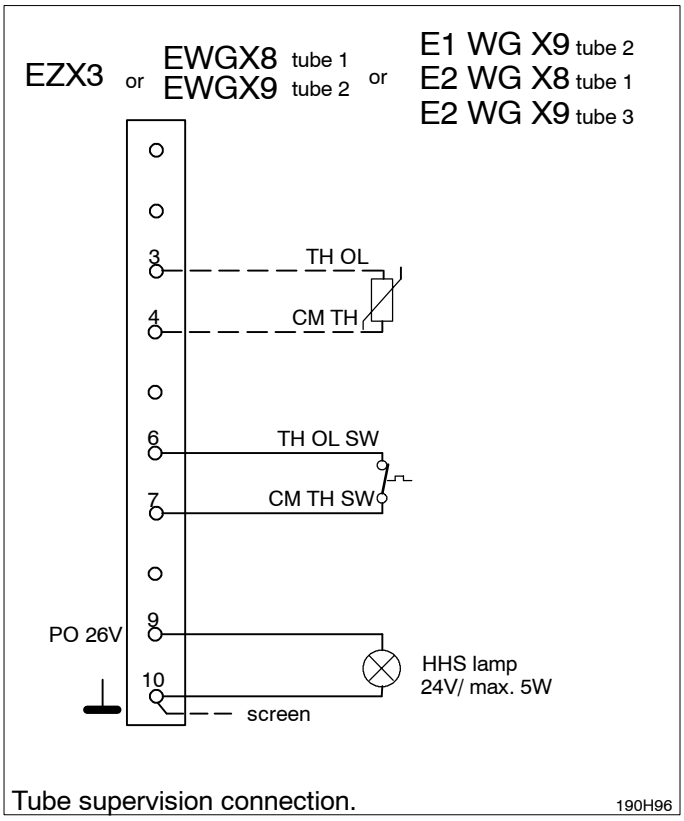
1.4.2. Tube supervision

- Connect the thermal switch or the thermal sensor of the tube housing assembly.

For U.S.A. and U.K. only:

- Connect the HHS-lamp to indicate the selected tube housing assembly.



Tube supervision connection. 190H96

1.4.3. CAN interface

Only for examination units which are provided with a CAN system interface.

- Connect the following plugs:

System	Connector		
	EZX23 signal bus	EZX42 or EZX42-1 system CAN	EZX43 or EZX43-1 system CAN
BukyDiagnost TH / TH2	X		X
DigitalDiagnost	X	X	X
Thoravision	X	X	X

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1.4.4. Adapter for 4 auxiliary units

Adapter for 4 auxiliary units RAD (Bucky, Tomo) WA / 1WA / 2WA used for examination units which provide their control signals individually via decade cables.

Each of the release circuits and the Bucky decades can be assigned to one or several of the RGDV buttons 1...8 via software programming.

Survey: ”Connection diagram” in section 4.

Z1-1.2 ”Block diagram Expansions”.

Detail: Z1-15.1 ”Adapter 4 aux. units WA / 1WA / 2WA”.

It provides:

1. 4 release decades to be used for
   - grid / syncmaster auxiliaries
   - HHS cassette present interlock

2. 2 Bucky decades to be used for
   - format size contacts (collimator, side fields ON/OFF)
   - Bucky-tomo remote switch-over
   - tomo ready condition
   - Bucky ready condition
   - HHS cassette present interlock
     to be activated by SW programming (see modul Configuration part 1 chapter 1.2).

     After activation via SW: Signals not provided by the system must be simulated by jumpers.

3. 1 decade EXON signal for the system via opto coupler

4. 1 decade (output) for 8 tomo trajectories

5. 1 decade for 8 tomo time inputs

6. 1 decade for 8 external APRT
   - WA backpanel programmed as 1WA = 2 AUX + 6 APRT
   - WA backpanel programmed as 2WA = 8 APRT

7. 1 decade for PSC (**P**atient **S**ize **C**orrection)

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1.4.5. Dose inputs

- Connect the measuring chambers to the D-Sub connectors EZX21 / 22 / 31 / 32 / 41.

  There are no assignement restrictions because the measuring chambers are allocated to the auxiliaries in SW programming.

- Withdraw pins 101–102–103 or A–D–H for measuring field selection at the junior / extremity measuring chamber.

  These measuring chambers have only one measuring field. The terminal for the left-hand field is used in other configurations for switching over intensification and must not be connected here.

NOTE

*AMPLIMAT cables 9803 507 0xx02 (for hybrid measuring chambers 9803 509 xxxxx) with 3-Plus plugs at both ends **must** be connected in the generator by the following adapter for each cable:*

Adapter for AMPLIMAT cable: 4512 108 09042. The generator includes 1 adapter.

The hybrid measuring chambers 9803 509 xxxxx require connection (chassis) between contacts

D-Sub end GND (13) <---> RF 0V (8) (generator input)

or

3-Plus end GND (N) <---> RF 0V (J) (generator input)

This connection is established by the adapter for the AMPLIMAT cable.
See Z1.6 ”Basic interface” of the generator manual.

In case of a hybrid measuring chamber 9803 509 xxxxx is **not** operated with the required

AMPLIMAT cables . . . . . 3-Plus / 3-Plus 9803 507 0xx02

but with

AMPLIMAT cables . . . . . D-Sub / 3-Plus 9890 000 017xx

make sure to establish this connection (13 <---> 8) in the D-Sub connector!

For ALC measuring chambers 9890 000 016xx connection GND <---> RF 0V is not permitted.
Therefore, ALC measuring chambers AMPLIMAT cables 9890 000 017xx should always be used.

1.4.6. Patient Data Organizer PDO (option)

See operator’s manual Patient Data Organizer.

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1.5. H.V. cables generator side

See ”Connection diagram” in section 4.

- Mark the H.V. cables at the generator and the tube end with the correct polarity.
- Fix the H.V. cables on the left-hand side of the wall junction box on the middle rail to provide drag relief for the cables. The short ends of the H.V. cables which are going to the H.V. generator must be routed in downward direction in this area.
  The free cable lengths including plugs should be about 1.5m.
- Twist the H.V. cables counter-clockwise by one turn and connect them to the H.V. generator.
  The twisting of the cables allows that the H.V. cables can be put into a loop when the cabinet is placed against the wall.

  The H.V. sockets should always be filled with some oil. At least the lower half of the plugs must be wet with oil.

CAUTION

Do not use a silicone washer.

Do not grease the plugs with silicone.

The union nuts of the high-voltage connectors must be tightened up to ensure good electrical contact for screening.

Only high-voltage connectors which have threaded flange halves may be used.

Older high-voltage cables still have connectors where the flange halves are kept together with a spring washer. In such cases the modification kit 4512 103 80852 is required.

1.6. Emergency-OFF circuit

- Connect the emergency-OFF buttons to EZX4:1/2.
  If not necessary, link pins 1 - 2.

  See Z1-2.1 ”Power supply” and Z2-5.2 “Backpanel Basic rack-2Z”.

■

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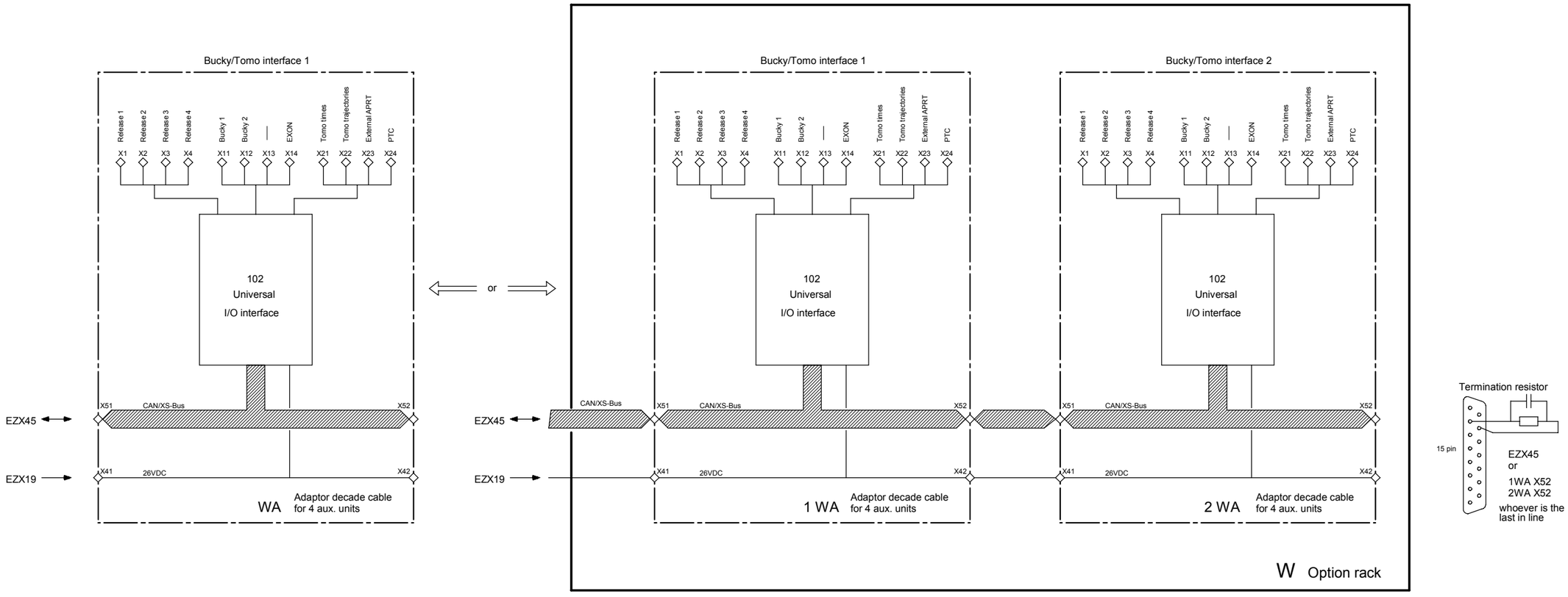
Function unit ADAP _a

Function unit ADAP a_

Function unit ADAP b_



A1/A3 02-03-19 Schr./K0

Block diagram
Expansions

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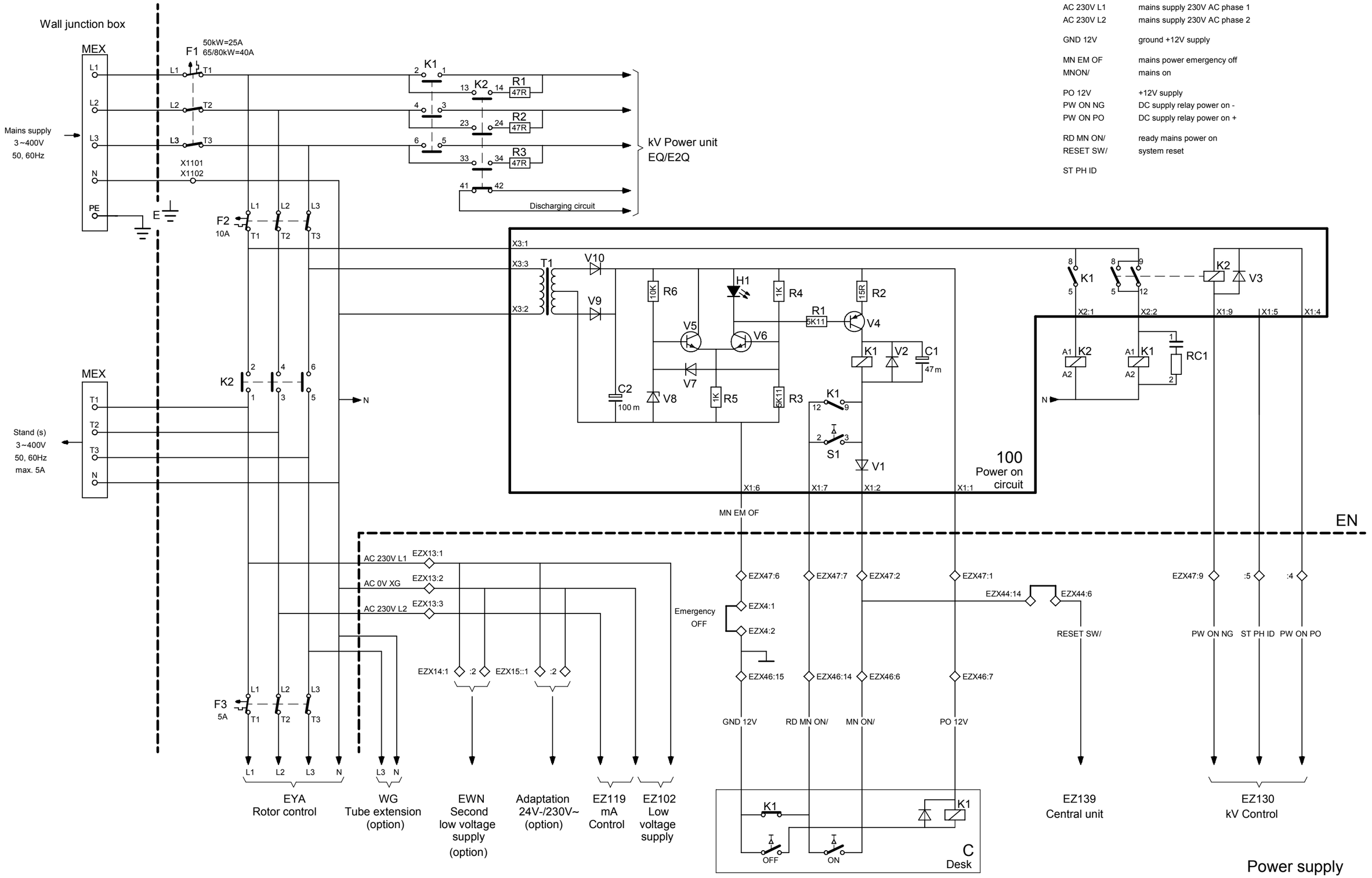
Mnemonic's

AC 0V XG	mains supply 0V X-ray generator
AC 230V L1	mains supply 230V AC phase 1
AC 230V L2	mains supply 230V AC phase 2
GND 12V	ground +12V supply
MN EM OF	mains power emergency off
MNON/	mains on
PO 12V	+12V supply
PW ON NG	DC supply relay power on -
PW ON PO	DC supply relay power on +
RD MN ON/	ready mains power on
RESET SW/	system reset
ST PH ID	



A2/A3 02-03-19 Schr./Kö

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Mnemonic's

AC 0V XG	mains supply 0V X-ray generator
AC 230V L1	mains supply 230V AC phase 1
AC 230V L2	mains supply 230V AC phase 2
GND 12V	ground +12V supply
MN EM OF	mains power emergency off
MNON/	mains on
PO 12V	+12V supply
PW ON NG	DC supply relay power on -
PW ON PO	DC supply relay power on +
RD MN ON/	ready mains power on
RESET SW/	system reset
ST PH ID	

Wall junction box

MEX

Mains supply
3~400V
50, 60Hz

F1 50kW=25A
65/80kW=40A

X1101
X1102

K1 R1 47R
K2 R2 47R
R3 47R

kV Power unit
EQ/E2Q

Discharging circuit

F2 10A

K2

Stand (s)
mains supply 230V AC
50, 60Hz
max. 5A

N

F3 5A

AC 230V L1 EZX13:1
AC 0V XG EZX13:2
AC 230V L2 EZX13:3

EZX14:1 :2 EZX15::1 :2

EYA
Rotor control

WG
Tube extension
(option)

EWN
Second
low voltage
supply
(option)

Adaptation
24V-/230V~
(option)

EZ119
mA
Control

EZ102
Low
voltage
supply

X3:1 X3:3 X3:2 T1 V10 V9 C2 100 m V8

R6 10K R5 1K R4 1K R3 6K11 R2 15R R1 6K11

H1 V5 V6 V7 V4 K1 V2 C1 47 m S1 V1

100
Power on
circuit

X1:6 X1:7 X1:2 X1:1

MN EM OF

EN

K1 K2 V3

X2:1 X2:2 X1:9 X1:5 X1:4

A1 K2 A2 A1 K1 A2 RC1

EZX47:6 EZX47:7 EZX47:2 EZX47:1

EZX44:14 EZX44:6

EZX4:1 EZX4:2

Emergency
OFF

RESET SW/

EZX47:9 :5 :4

PW ON NG ST PH ID PW ON PO

EZX46:15 EZX46:14 EZX46:6 EZX46:7

GND 12V RD MN ON/ MN ON/ PO 12V

K1 OFF ON K1

C
Desk

EZ139
Central unit

EZ130
kV Control

Power supply
for digital DIAGNOST

A2/A3 02-03-19 Schr./Kö

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Wall junction box

MEX

Surge arrester

Mains supply
3~ 400V...480V
50, 60Hz

L1 L2 L3 N PE

X1101 X1102 X1103

PE PE PE

WN

Z_j= 23 mΩ at 60 Hz
Z_j= 20 mΩ at 50 Hz

E

F1
50kW=25A
65/80kW=40A

L1 T1 L2 T2 L3 T3

K1 K2 R1 47R R2 47R R3 47R

41 42 Discharging circuit

kV Power unit
EQ/E2Q

TX 1101
..02 ..03 480V
..04 ..05 ..06 460V
..07 ..08 ..09 440V
..10 ..11 ..12 400V

Connected according to mains voltage.

L1 L2 L3

T

t
Thermo fuse

TX1201 ..02 ..03 ..04

L1 L2 L3

F2
10A
T1 T2 T3

X1101
X1102

MEX

K2 2 4 6 1 3 5

T1 T2 T3 N

Stand (s)
3~400V
50, 60Hz
max. 5A

N

X3:1 X3:3 X3:2 T1

V10 V9

10K R6 1K R4 15R R2

H1

R1 5K11 V4

V5 V6

K1 V2 C1 47 m

V7

C2 100 m V8 1K R5 5K11 R3

K1 12 9

2 3 S1

V1

100
Power on circuit

X1:6 X1:7 X1:2 X1:1

MN EM OF

EN

AC 230V L1 EZX13:1
AC 0V XG EZX13:2
AC 230V L2 EZX13:3

EZX47:6 EZX47:7 EZX47:2 EZX47:1

Emergency OFF

EZX4:1
EZX4:2

EZX44:14 EZX44:6

RESET SW/

EZX47:9 :5 :4

PW ON NG SI PH ID PW ON PO

EZX46:15 EZX46:14 EZX46:6 EZX46:7

GND 12V RD MN ON/ MN ON/ PO 12V

EZ139
Central unit

EZ130
kV Control

8 K1 5 8 9 K2 5 12 V3

X2:1 X2:2 X1:9 X1:5 X1:4

t TX1205 Thermo fuse TX1206

A1 K2 A2 A1 K1 A2 1 RC1 2

N

F3
5A
L1 L2 L3
T1 T2 T3

EZX14:1 :2 EZX15:1 :2

L1 L2 L3 N L3 N

EYA
Rotor control

WG
Tube extension
(option)

EWN
Second
low voltage
supply
(option)

Adaptation
24V-/230V~
(option)

EZ119
mA
Control

EZ102
Low
voltage
supply

K1 K1
OFF ON

C
Desk

Mnemonic's

AC OV XG	mains supply 0V X-ray generator
AC 230V L1	mains supply 230V AC phase 1
AC 230V L2	mains supply 230V AC phase 2
GND 12V	ground +12V supply
MN EM OF	mains power emergency off
MNON/	mains on
PO 12V	+12V supply
PW ON NG	DC supply relay power on -
PW ON PO	DC supply relay power on +
RD MN ON/	ready mains power on
RESET SW/	system reset
SI PH ID	single phase identifier

Power supply
with mains transformer

Z1-2.2

A2/A3 02-03-19 Schr./Kö

4512 983 05941 (97.1)

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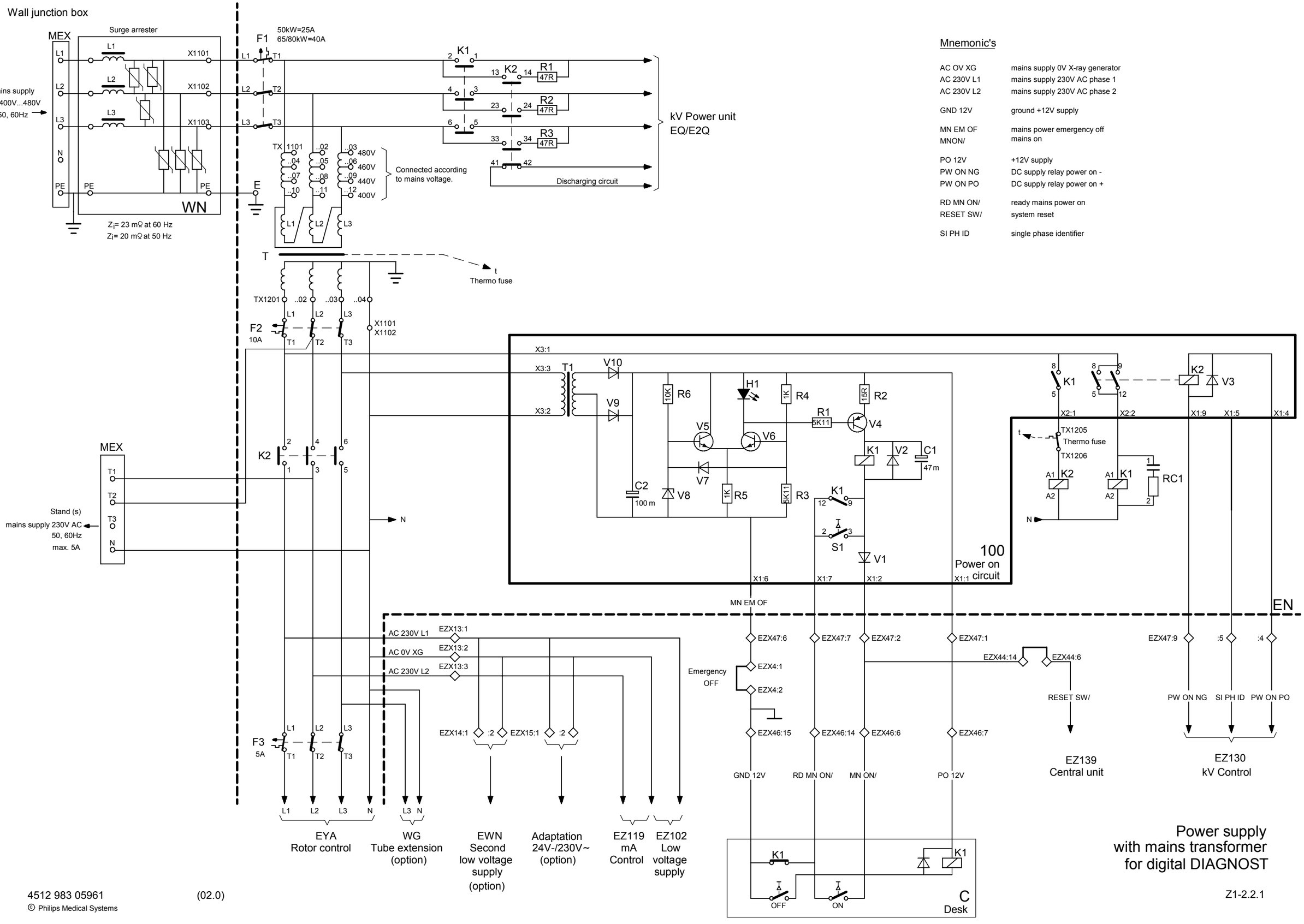

Mnemonic's

AC OV XG	mains supply 0V X-ray generator
AC 230V L1	mains supply 230V AC phase 1
AC 230V L2	mains supply 230V AC phase 2
GND 12V	ground +12V supply
MN EM OF	mains power emergency off
MNON/	mains on
PO 12V	+12V supply
PW ON NG	DC supply relay power on -
PW ON PO	DC supply relay power on +
RD MN ON/	ready mains power on
RESET SW/	system reset
SI PH ID	single phase identifier

Power supply with mains transformer for digital DIAGNOST

Z1-2.2.1

A2/A3 02-03-20 Schr./Kö

4512 983 05961 (02.0)

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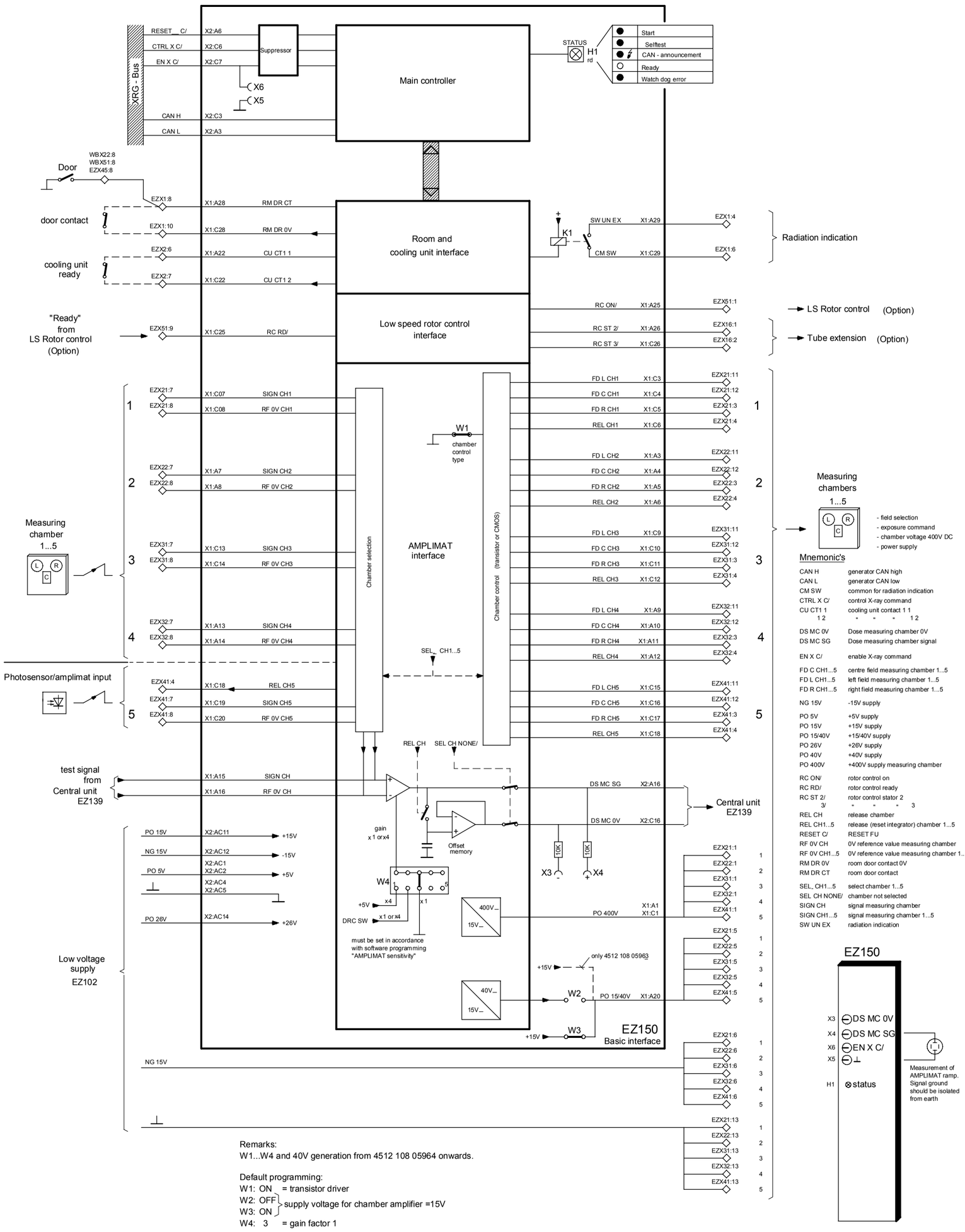
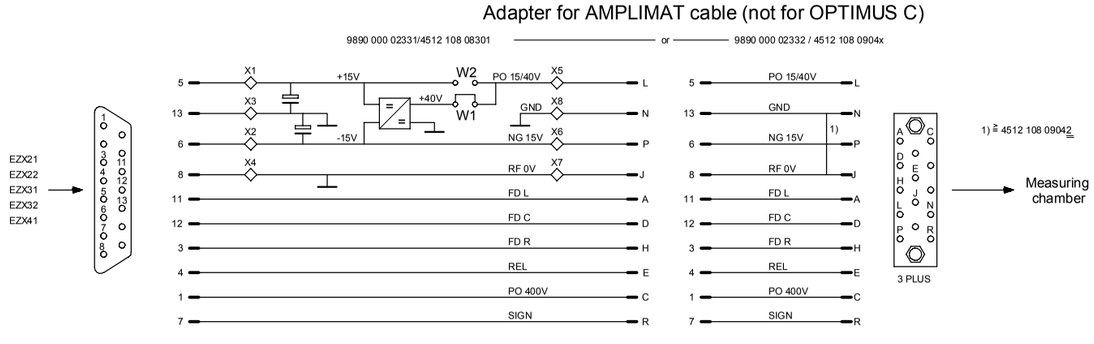
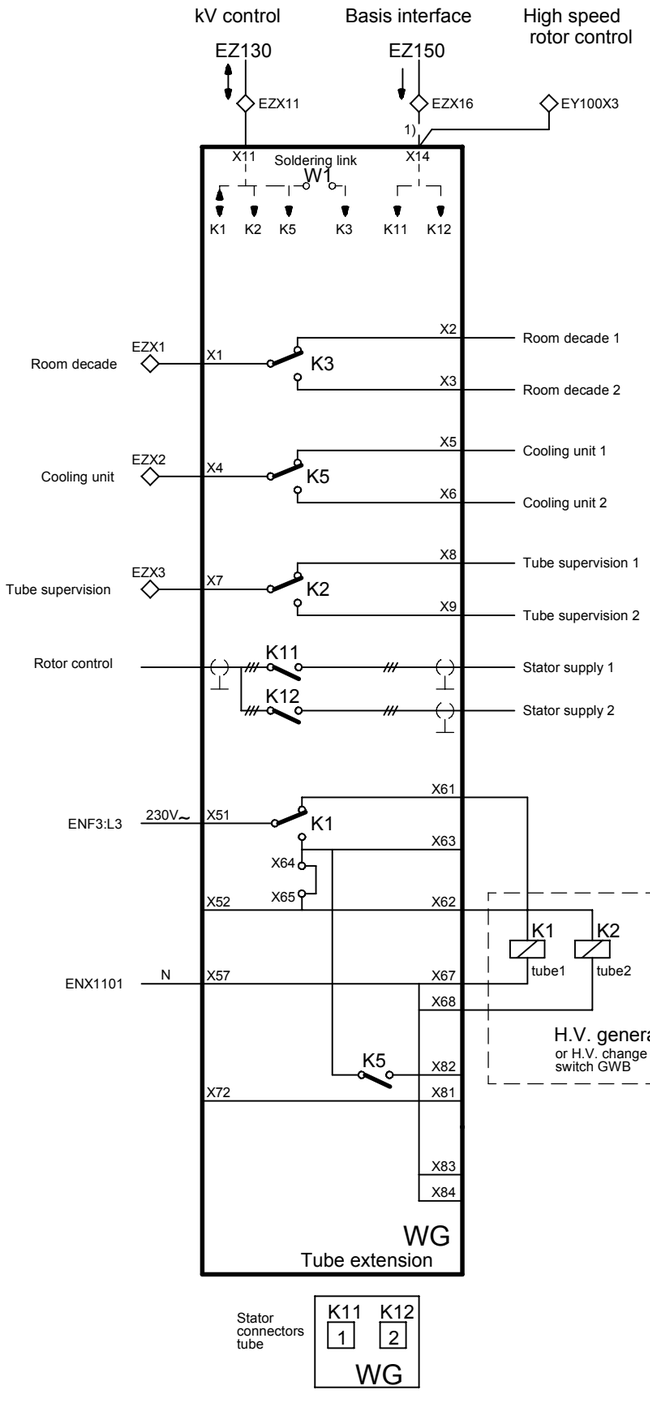
4512 983 05531 (02.0)



Adapter for AMPLIMAT cable (not for OPTIMUS C)



Tube extension for 2 tubes

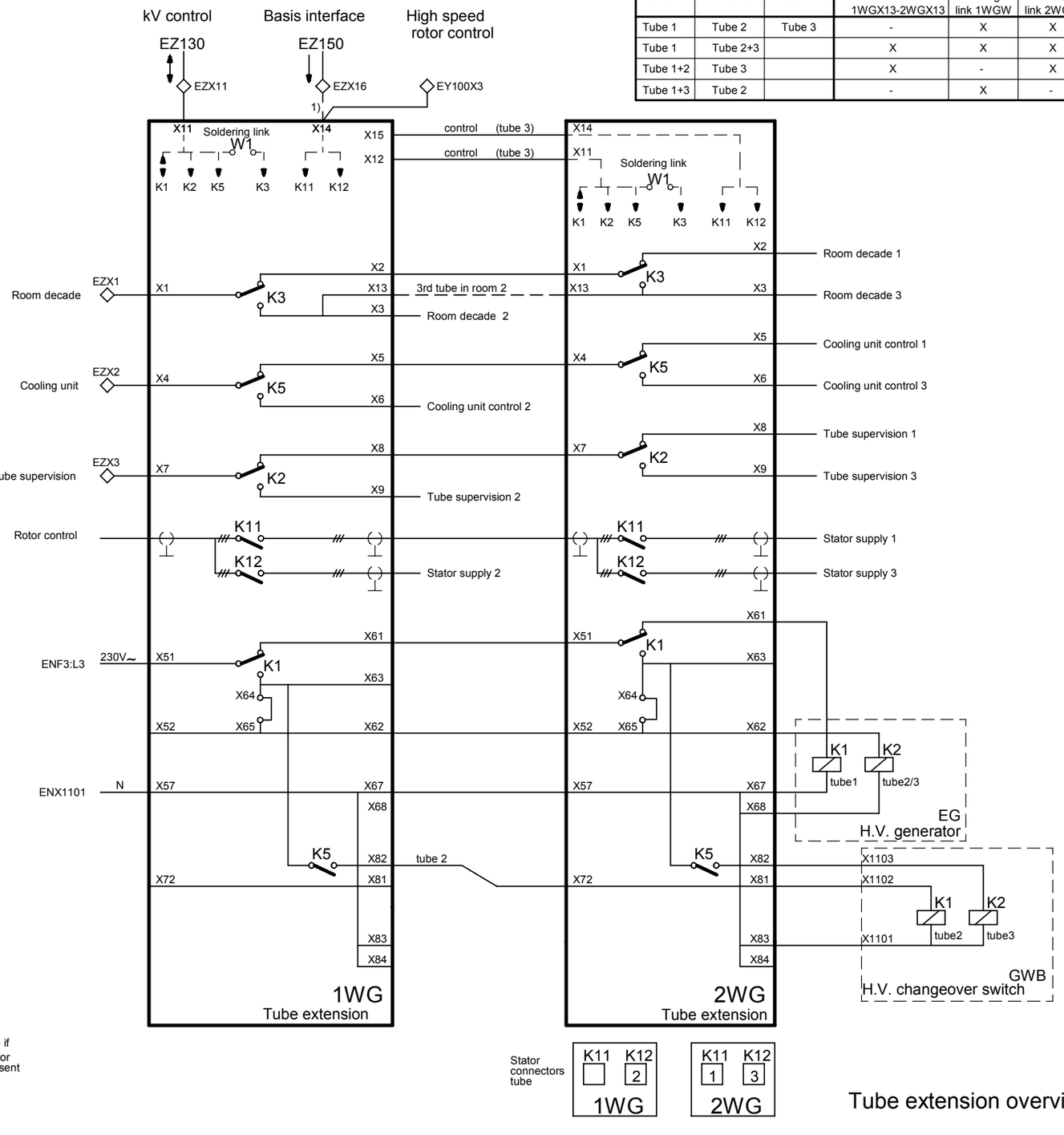


1) Connect here if low speed rotor control is present

Tube extensions for 3 tubes

Hardware programming

Room 1	Room 2	Room 3	cable 1WGX13-2WGX13	soldering link 1WGW	soldering link 2WGW
Tube 1	Tube 2	Tube 3	-	X	X
Tube 1	Tube 2+3		X	X	X
Tube 1+2	Tube 3		X	-	X
Tube 1+3	Tube 2		-	X	-



Tube extension overview

A2/A3 02-03-19 Ost./Kö

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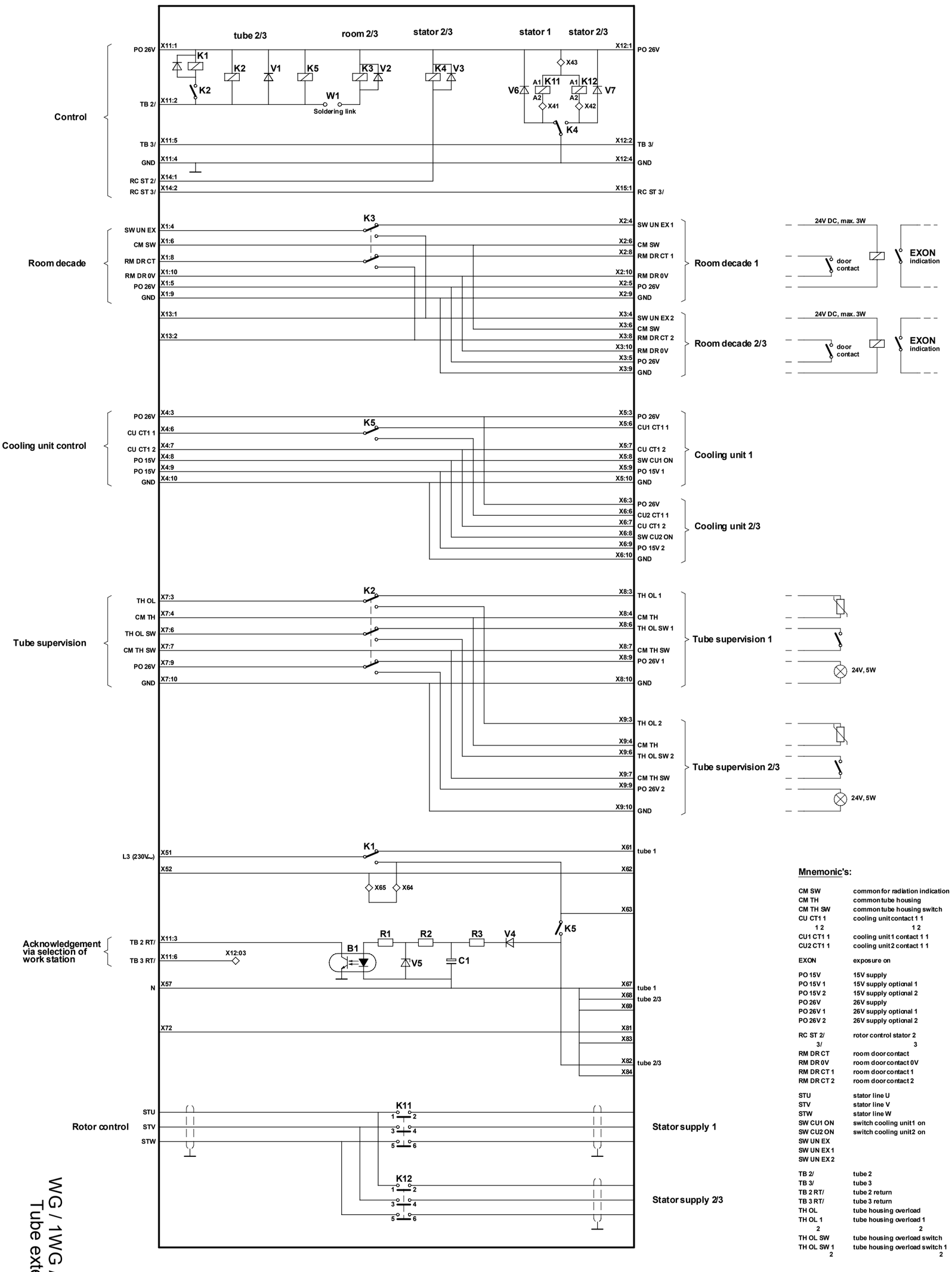
4512 983 05551
© Philips Medical Systems
(c/97.1)



Mnemonic's:

CM SW	common for radiation indication
CM TH	common tube housing
CM TH SW	common tube housing switch
CU CT1 1 2	cooling unit contact 1 1 1 2
CU1 CT1 1	cooling unit 1 contact 1 1
CU2 CT1 1	cooling unit 2 contact 1 1
EXON	exposure on
PO 15V	15V supply
PO 15V 1	15V supply optional 1
PO 15V 2	15V supply optional 2
PO 26V	26V supply
PO 26V 1	26V supply optional 1
PO 26V 2	26V supply optional 2
RC ST 2/ 3/	rotor control stator 2 3
RM DR CT	room door contact
RM DR 0V	room door contact 0V
RM DR CT 1	room door contact 1
RM DR CT 2	room door contact 2
STU	stator line U
STV	stator line V
STW	stator line W
SW CU1 ON	switch cooling unit1 on
SW CU2 ON	switch cooling unit2 on
SW UN EX	
SW UN EX 1	
SW UN EX 2	
TB 2/	tube 2
TB 3/	tube 3
TB 2 RT/	tube 2 return
TB 3 RT/	tube 3 return
TH OL	tube housing overload
TH OL 1 2	tube housing overload 1 2
TH OL SW	tube housing overload switch
TH OL SW 1 2	tube housing overload switch 1 2

4512 983 05571 (97.0)
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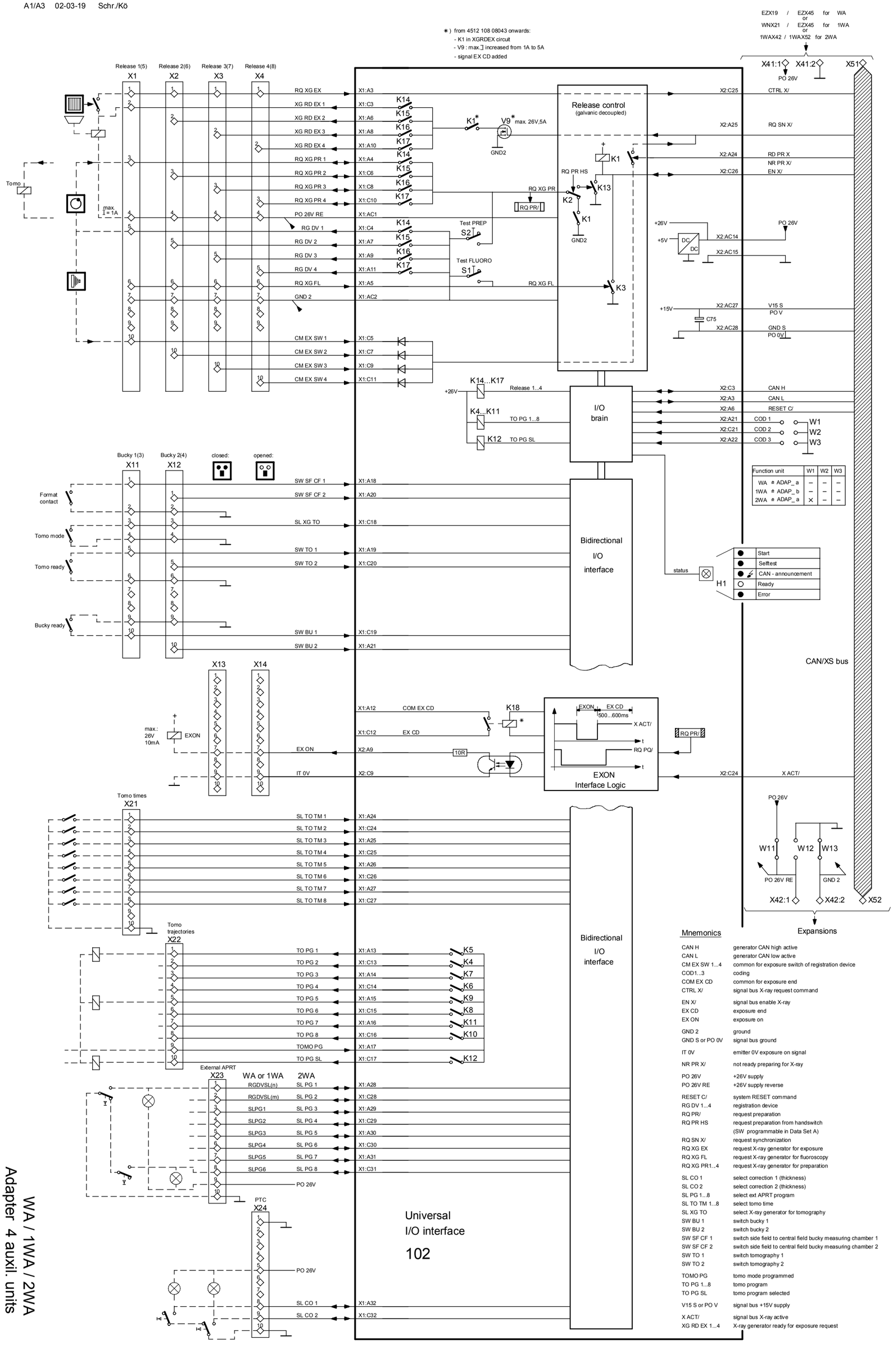
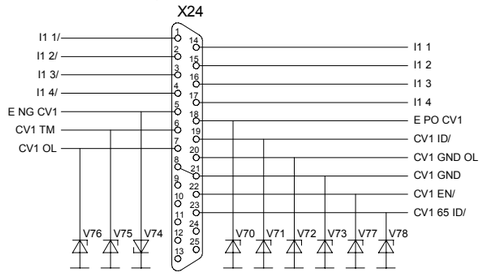


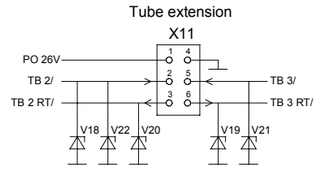
WA / 1WA / 2WA
Adapter 4 auxil. units

Z1-15.1

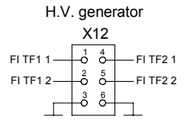
kV power unit EQ



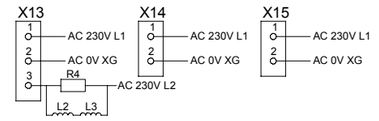
Tube extension



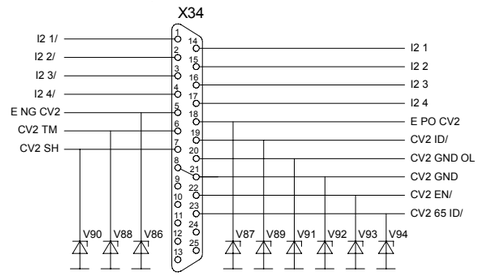
H.V. generator



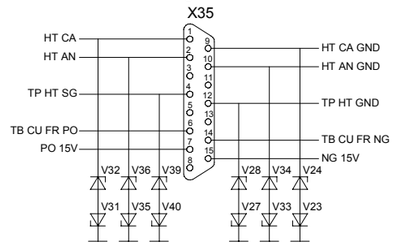
Power supply



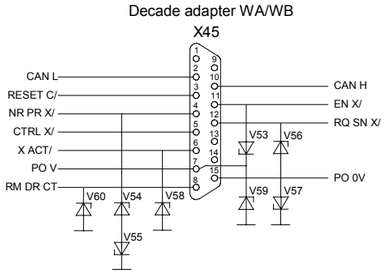
kV power unit E2Q



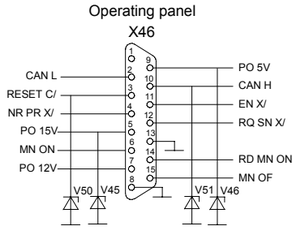
H.V. generator



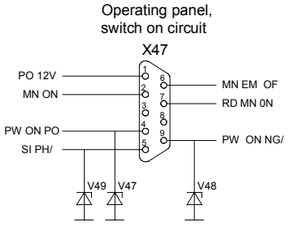
Decade adapter WA/WB



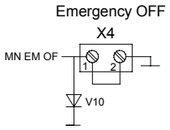
Operating panel



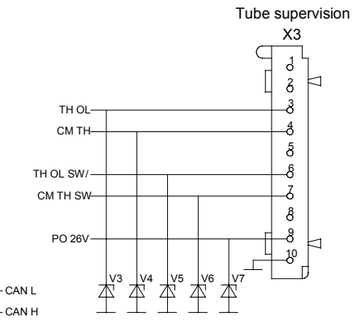
Operating panel, switch on circuit



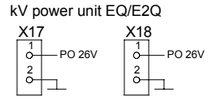
Emergency OFF



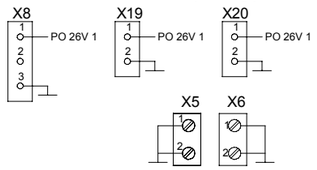
Tube supervision



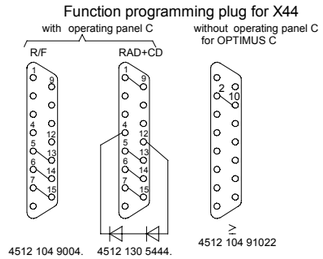
kV power unit EQ/E2Q

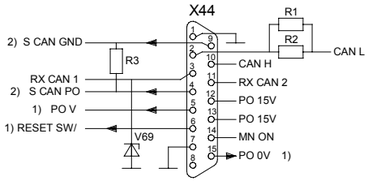


Operating panel



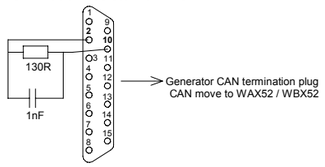
Function programming plug for X44



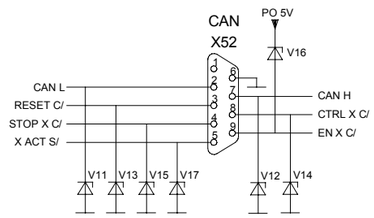


1) To Signal Bus X23
2) To System CAN X43

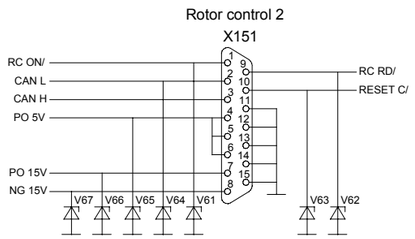
Termination resistor for X45



CAN X52



Rotor control 2



For survey of the components see Z2-5.4

A1/A3 02-03-19 Schr./K6

Backpanel EZ
Basis rack-2 Z
4512 108 0936.

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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06091

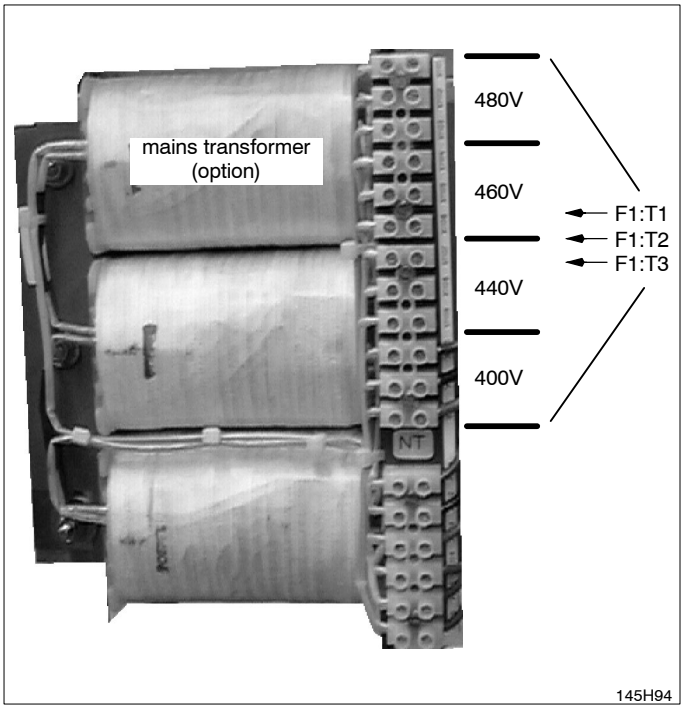
3-1...3-2 (02.0)

Hardware programming

1. Hardware programming

1.1. Mains transformer (option)

- In case of a present mains transformer 4512 204 0010x in the generator, connect the primary end according to the rated voltage of the mains.
  Connect 400V mains systems up to the 480V terminal.
- Modify EMC filters EQ200 in the converter assemblies EQ / E2Q if the generator is operated via the optional surge arrester on a grounded delta mains.
  See service documentation for surge arrester and converter R/F.



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1.2. PCB EZ150 basic interface

NOTE

Never change jumper W1.

- Voltage supply for the amplifiers of connected measuring chambers:

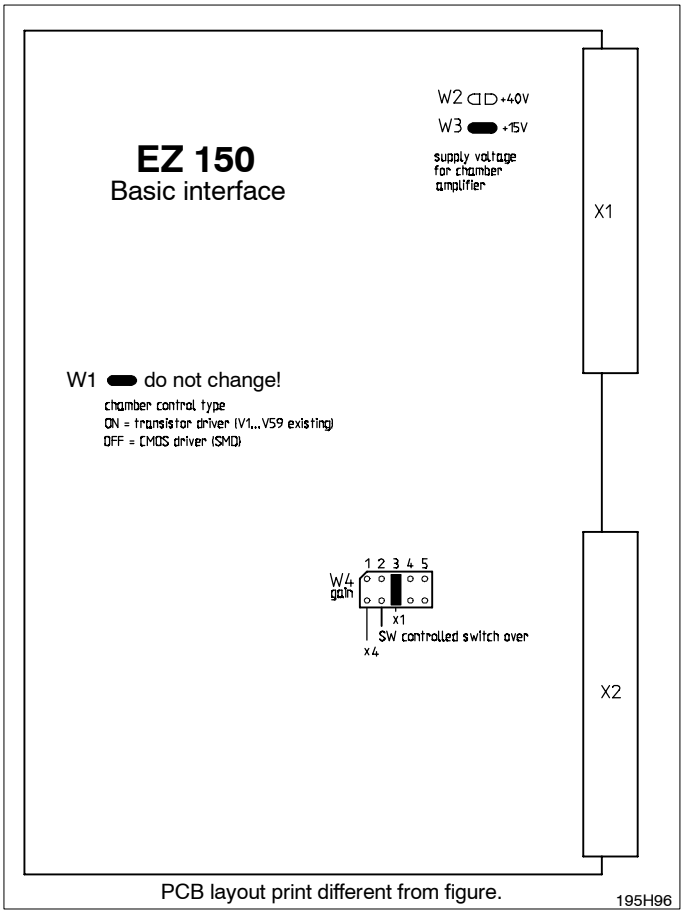
Voltage\Soldering link	EZ 150 W2	EZ 150 W3
15V default	OFF	ON
40V	ON	OFF

Working voltage range for ALC measuring chambers: 15 ... 45V

Working voltage range for hybrid measuring chambers: 40 ... 45V

ALC measuring chambers can be recognized by the code No. 4512 104 xxxxx.

Hybrid measuring chambers are based on code No. 4512 102/103 xxxxx.



PCB layout print different from figure. 195H96

- Set the gain factor for AEC techniques with jumper EZ150:W4:
  - Factor 1 ==> W4 in position 3 = default
    For screen/film combination with at least one system speed ≤ 200.
  - Factor 4 ==> W4 in position 1
    For screen/film combinations with all system speeds > 200.

- The software programming has to be set accordingly.

The rest of the generator hardware has been properly programmed at the factory.

If required, refer to subsystem manual OPTIMUS RAD section 5: PROGRAMMINGS.

■

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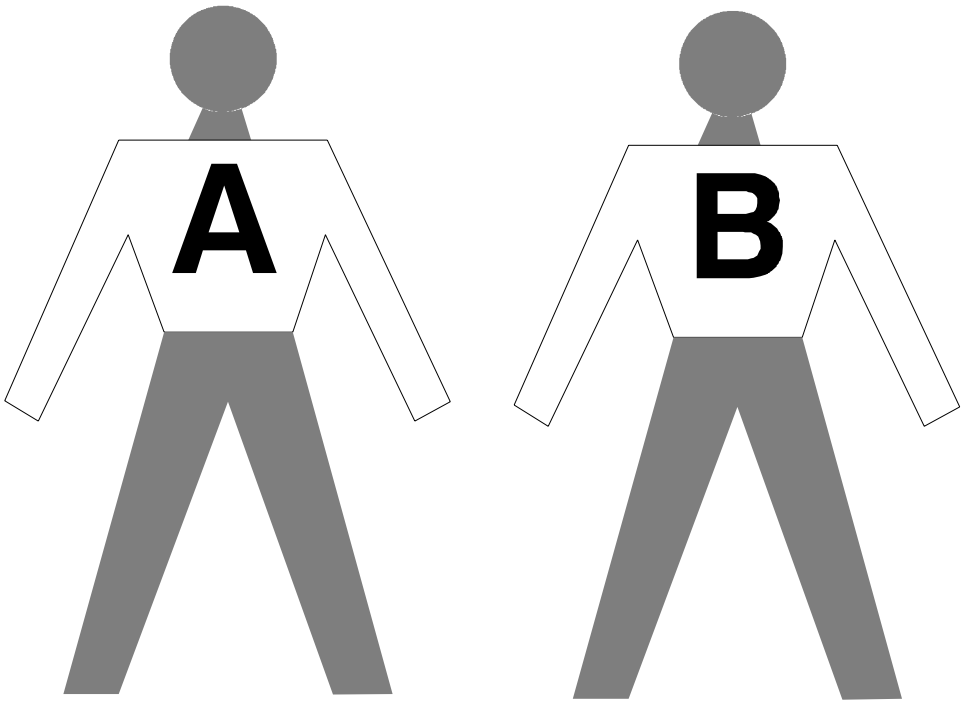
A
B

LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06291

3-1...3-2	(03.0)		
Z-3	(02.0)	A4	4512 982 0091.
Z-4	(02.0)	A3	4512 982 0091.

Control desk

Contents

1. Control Desk 3-2
1.1. Second handswitch (Option) 3-2
1.2. Control desk 3-2

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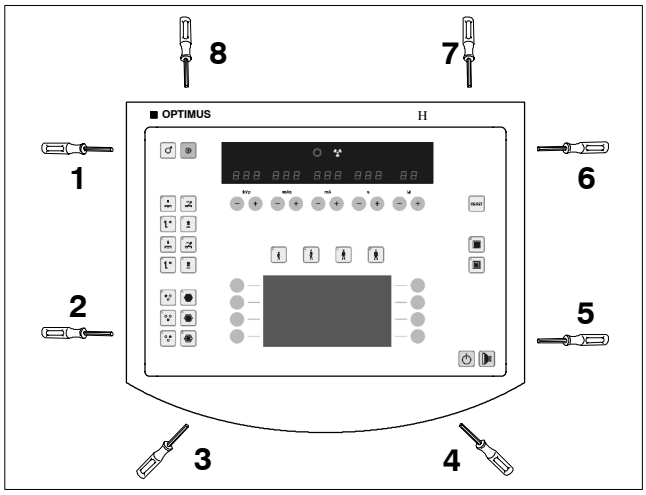
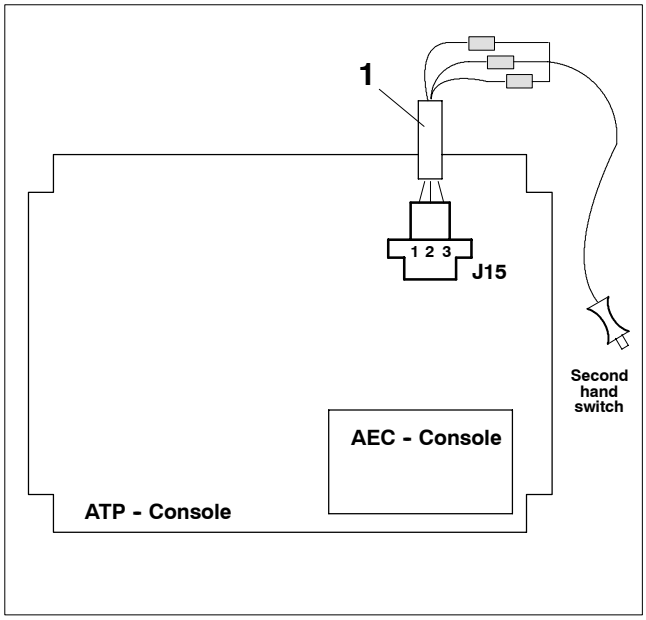
1. Control Desk

1.1. Second handswitch (Option)



- Remove the eight screws (hexagon sockets) below the user interface.



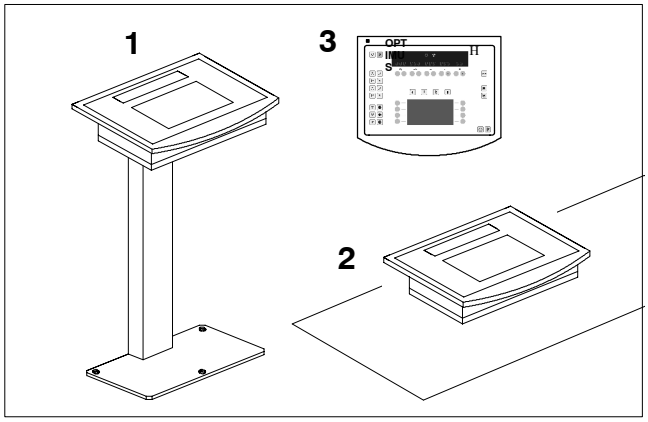
- Connect the handswitch to J15 on the ATP–console (J15/1 = Common, J15/2 = Prep., J15/3 = Exp.) and establish the connection to the second handswitch.

  Adapter (**1**) is delivered in the accessory kit of the generator cabinet.

- Close the console.

1.2. Control Desk

Three versions of control desks can be installed.



- **1** For fixing the stand alone use template Z–3.

- **2** The table versions can be positioned without any fixings at the table. Only two fixing bolts at back side must be removed.

- **3** The desk support plate has to be removed from the column of the stand alone version.

  Use template Z–4 to mount the corresponding support plate to the wall. Snap the control desk on the support plate.

■

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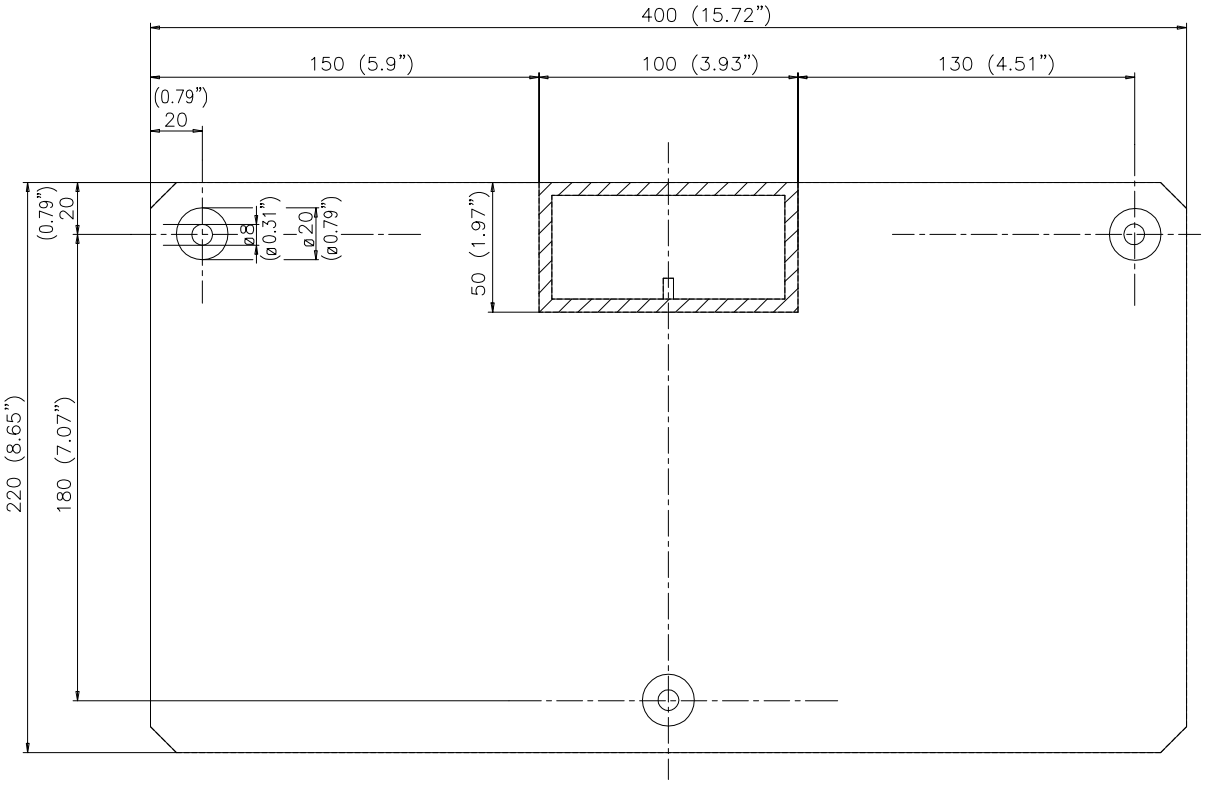


Product Planning Data

measures ( ) in inch

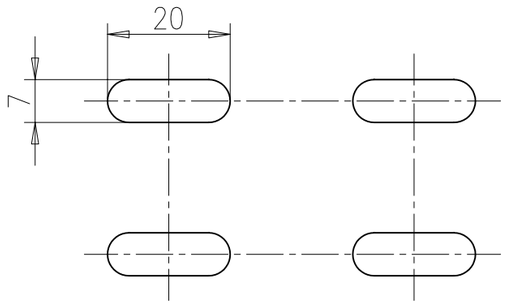
0 100 200
mm

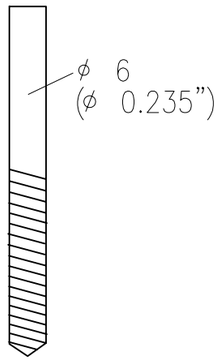
A4 02-05-23 Ost.
4512982009l1_z3_020

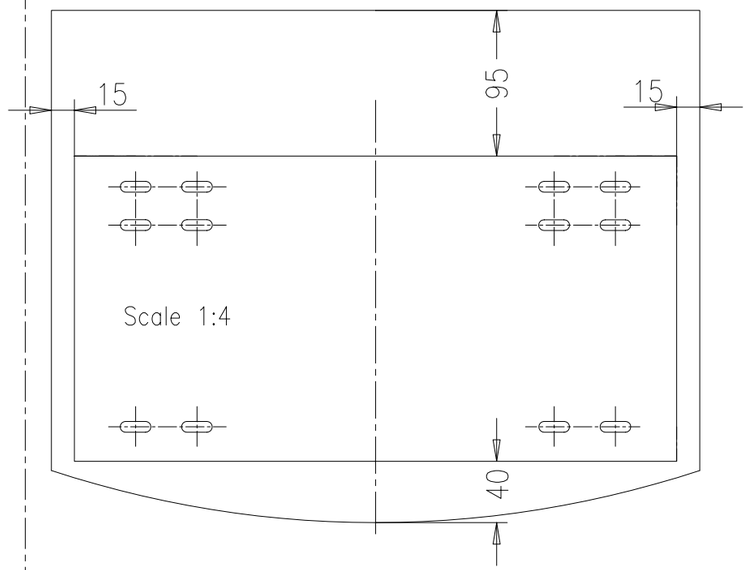
OPTIMUS 30 single phase
Control desk stand-alone
Floor plate

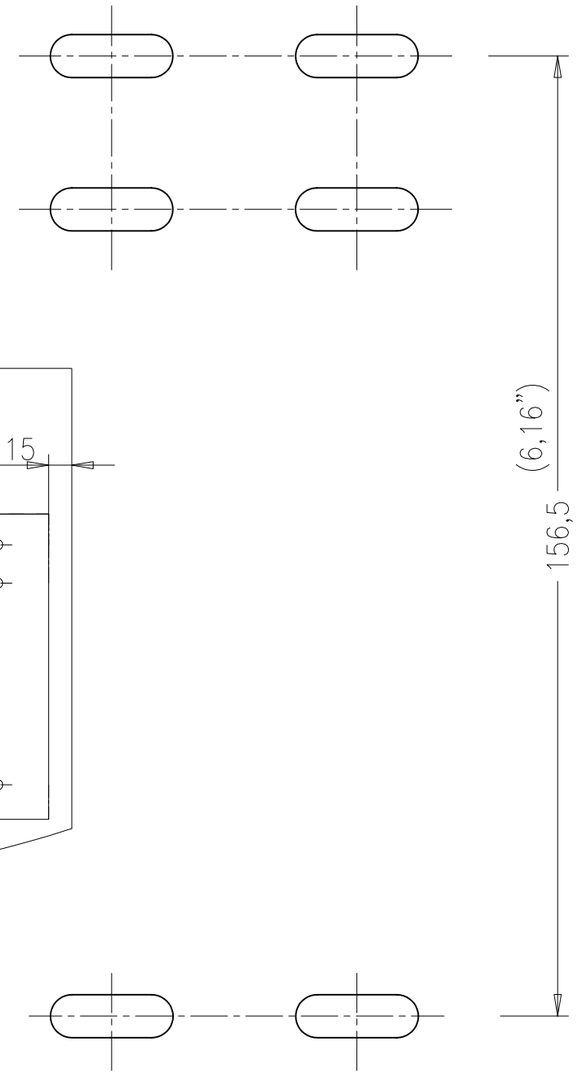
© Philips Medical Systems

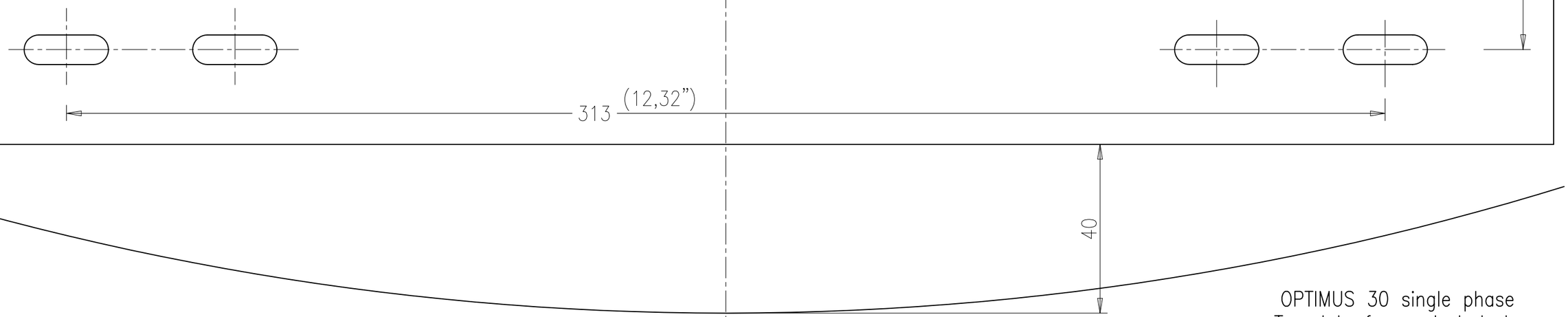
Product Planning Data











Scale 1:1

measures in mm (inches)

0 25 50
mm

OPTIMUS 30 single phase
Template for control desk
wall mounted version

A3 02-04-16 Schr./Ost.
4512982009 11_z4_020

LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06301

3-1...3-4	(03.0)		
Z-1.3	(02.0)	A3	4512 982 0091.
Z-1.4	(02.0)	A4	4512 982 0091.
Z-2.1	(02.0)	A4	4512 982 0091.
Z-2.2	(02.0)	A4	4512 982 00911

Mechanical Installation

Contents

1. Mechanical Installation 3-2
1.1. Installing the generator basement 3-2
1.2. Installing the wall support for the generator 3-2
1.3. Installing the generator 3-2
1.4. Installation of PMA 800 3-3

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1. Mechanical Installation

1.1. Installing the generator basement

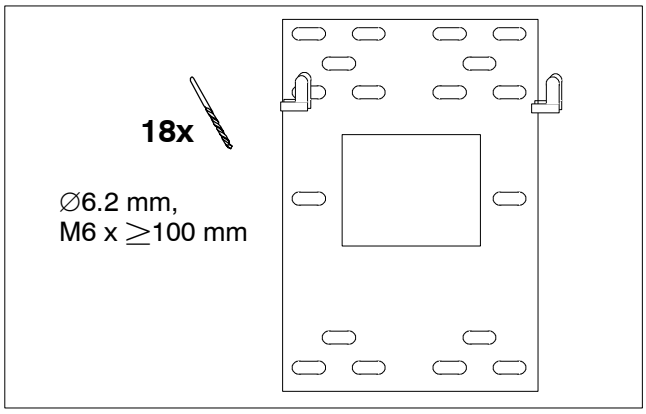
NOTE

Usually, the generator cabinet stands free.
In seismic areas or if required otherwise, secure the generator with four drillings to the floor, see drawing Z-2.1.
The generator can also be positioned at wall side. To hang the generator, see drawing Z-2.2.

1.2. Installing the wall support for the generator

This support kit is an option and allows positioning the generator wall side.

- The support kit code No. 4512 591 03171 is included with the standart delivery, see drawing Z-2.2.



1.3. Installing the generator

- Remove the two screws which fix the generator on cover bottom.

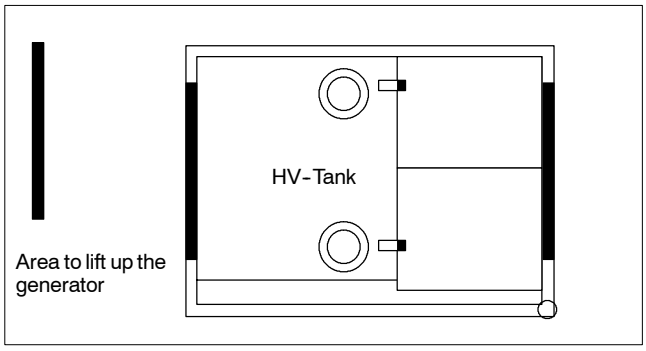
CAUTION

Do not damage the capacitor!

- Lift the generator by **two persons** off the shipping pallet and place it at its destination in the room.

CAUTION

The generator has a weight of 66 kg!



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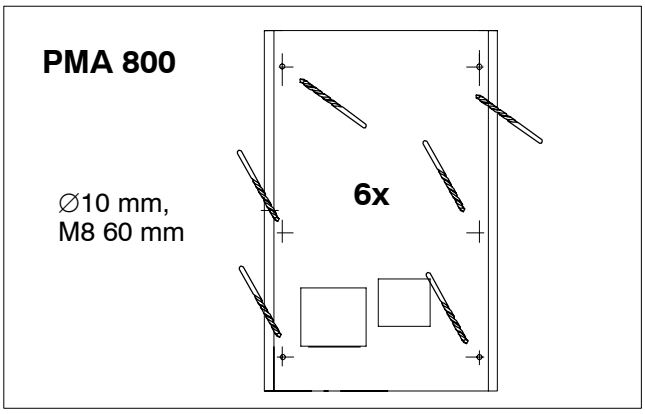
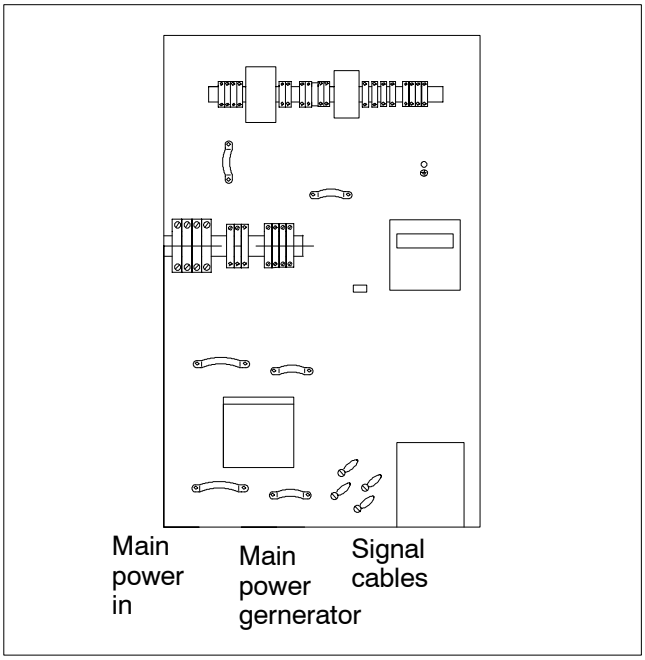
1.4. Installation of PMA 800

Concerning fixing and mechanical dimensions of the wall box refer to drawing Z-1.3.



- Connect named cables to PMA 800
- Main power-hospital to PMA 800
  N (L2) X22
  L1 X23
  PE X25
- Main power PMA 800 to generator cabinet
  N (L2) X22
  L1 X23
  PE X25

The main power line is internally (generator cabinet) connected at factory side.



- Power ON (for Bucky TS)
  gen. - 7x11:4 to X7 (PMA 800) +24 V
  gen. - 7x11:t to X8 (PMA 800) +GND

- Power supply (230 V~) to bucky TS

- Main power hospital to PMA 800 -- X1 = L1
  X2 N (L2)

(see drawing Z-1.4)

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NOTE

This main power supply is different to the supply circuit coming in on X22/X23.
The main power supply for bucky TS table must be fused from hospital side ≤ 16 A.

	output to the table bucky TS
X13 –	230 V ~ in case U_I = 120 V / 208 V / 240 V
X14 –	

	output to the table bucky TS
X11 –	230 V ~ if 230 V U_I is present
X12 –	

Trafo T1 is programmed at factory side to U_I = 240 V.
If other voltages are used on field side Re - programm T1.

■

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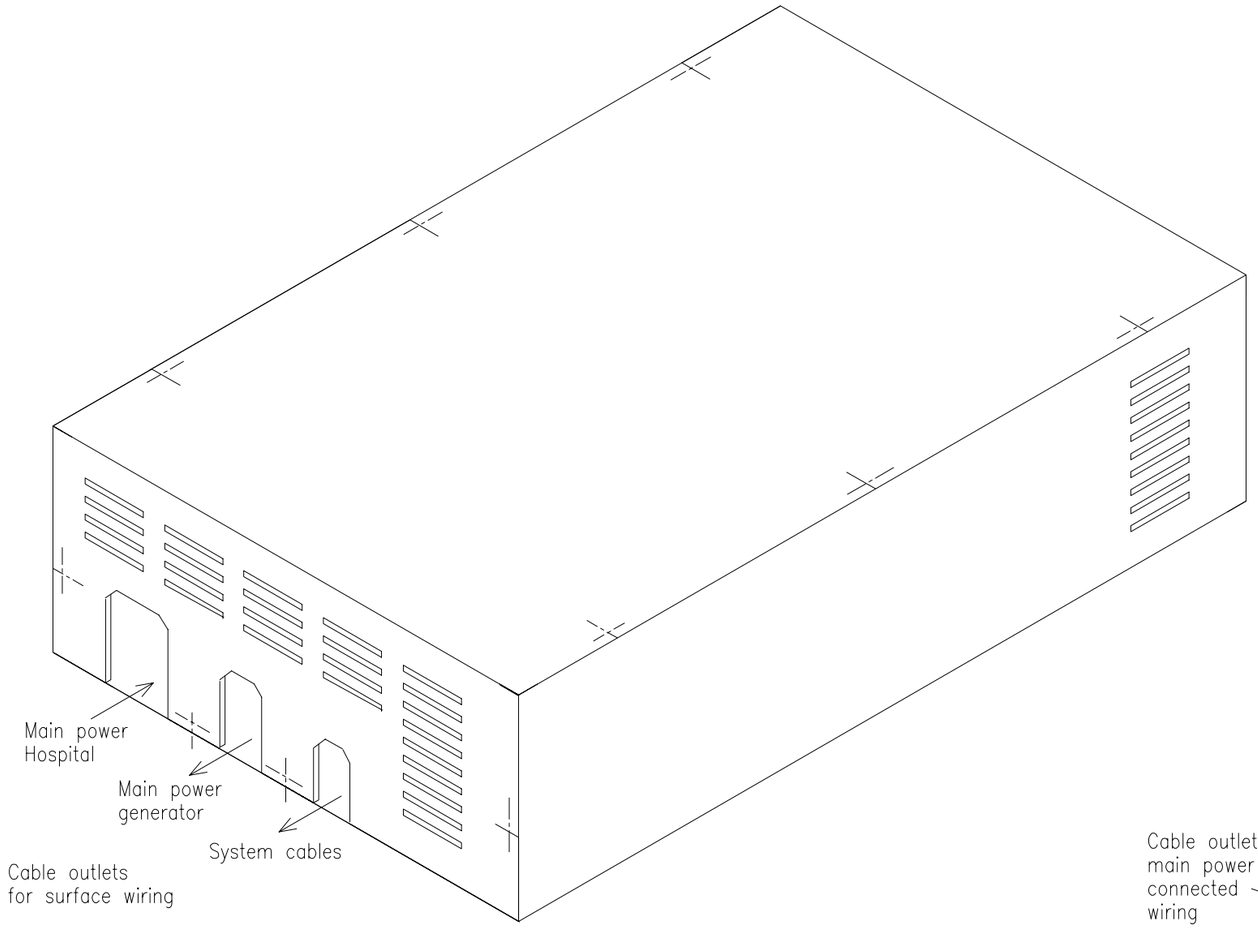
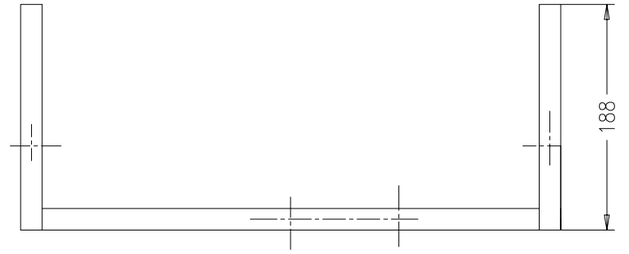
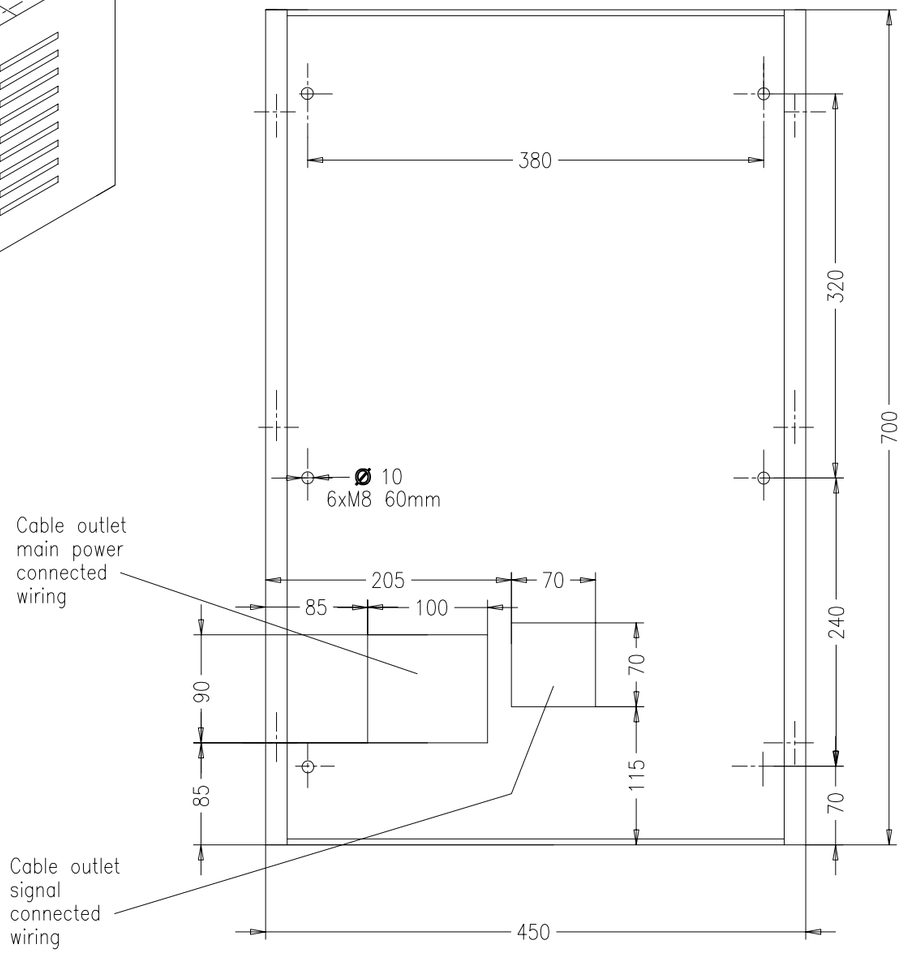
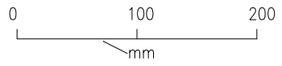


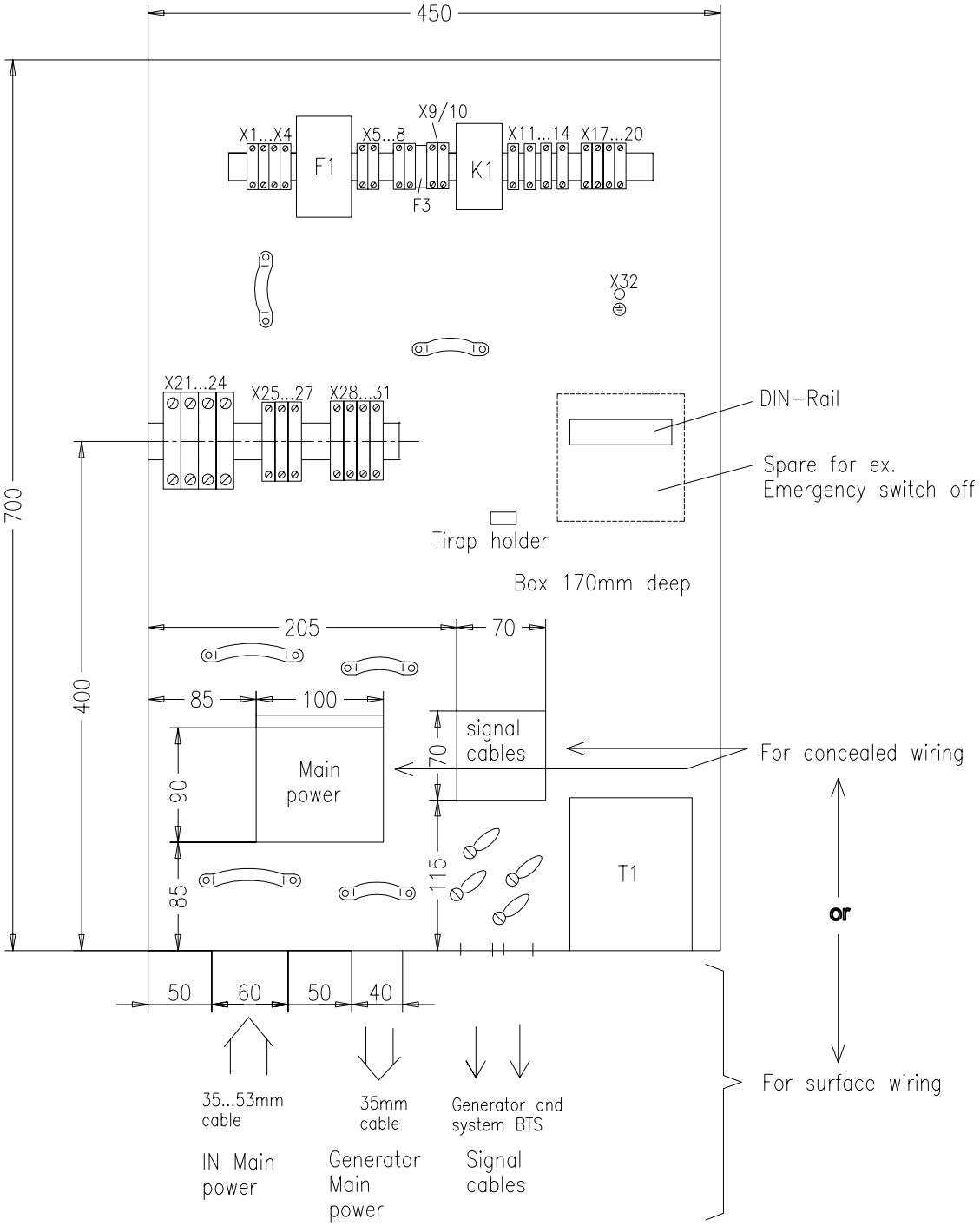
Weight of PMA 800 = 35kg







Power mains adaptation 800VA
(OPTIMUS 30 Single phase)
Mechanical dimensions and fixing



Product Planning Data

A4 02-05-23 Schr./Ost.
4512982009l1_z1_4_020

0 100 200
mm

Power mains adaptation 800 VA (OPTIMUS 30 Single phase) 9890 010 82141 Location plan and dimensions

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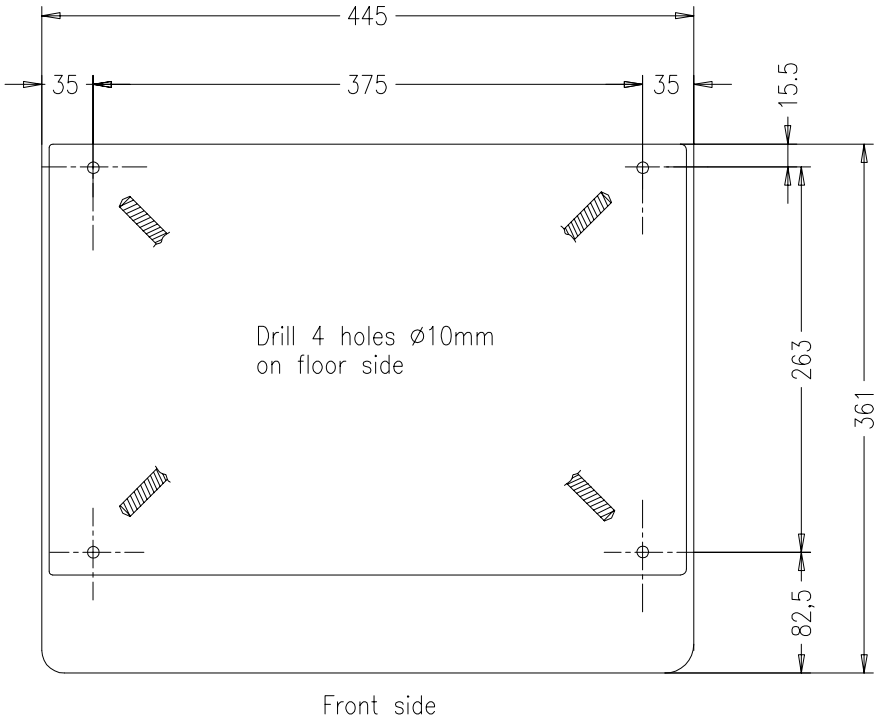
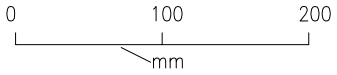
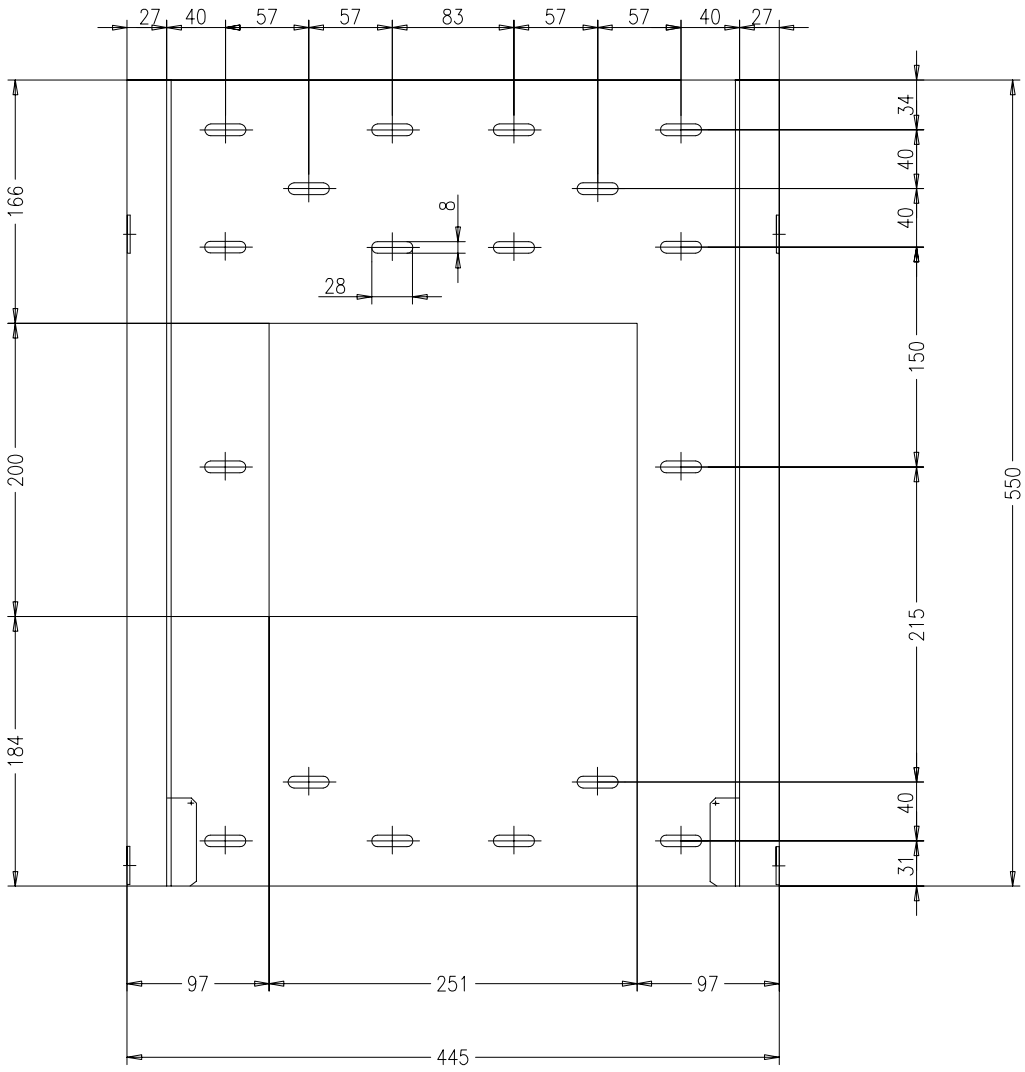




Basement
OPTIMUS 30 Single phase
Fixing for earth quake protection

© Philips Medical Systems



0 100 200
mm

Dimension wall support
for OPTIMUS 30 Single phase

A4 02-05-23 Schr./Ost.
4512982009 11_z2_2_020

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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06311

3-1...3-5 (02.0)

Cable connections

Contents

1. Cable connections 3-2

1.1. Cable routing to generator 3-2

1.2. Signal Cables 3-2
1.2.1. Power On 3-2
1.2.2. Room Interface - “X-ray warning light” 3-3
1.2.3. Room Interface - “room in use” 3-4
1.2.4. Tube Thermo Switch 3-5

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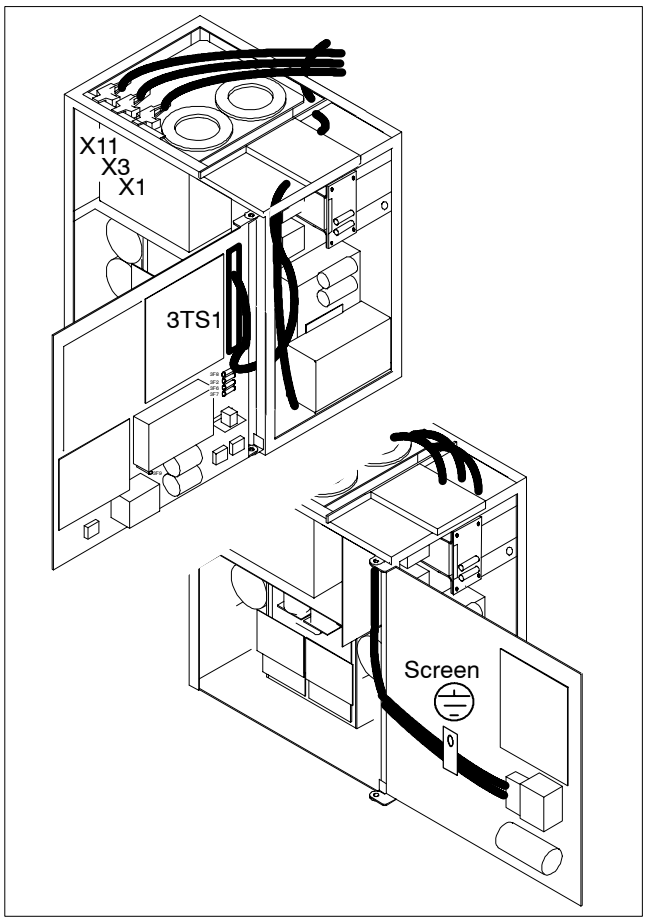
1. Cable connections

1.1. Cable routing to generator

- Fix the external system cables securely at the cabinet.
  - Internally route each cable along the back side towards the cable outlet positions and secure the cables at the cabinet by using cable ties.
  - Check all connectors on the PCBs and inside the cabinet.
- Check that all electrical connections are firm and secured and that all cable clamps are in place and that drag relief is provided.
- Check that all the cables are correctly routed.



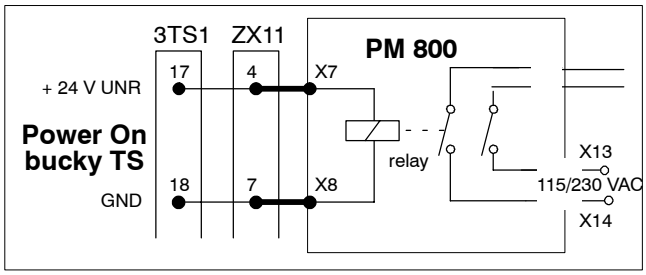
NOTE

Before mounting the covers of the cabinet, perform configuration, calibration and acceptance tests.

1.2. Signal Cables

1.2.1. Power On

- Connect
  - ZX11:4 to X7 on PM 800
  - ZX11:7 to X8 on PM 800



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1.2.2. Room Interface - “X-ray warning light”

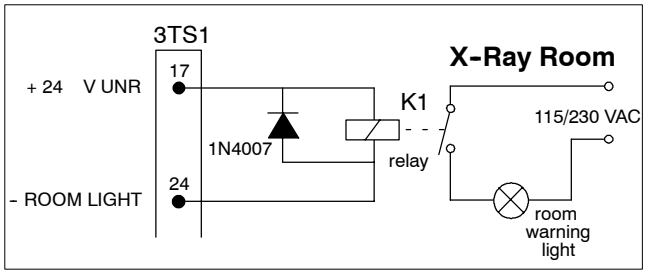
NOTE

Room warning light is released during “prep” and “exposure”.

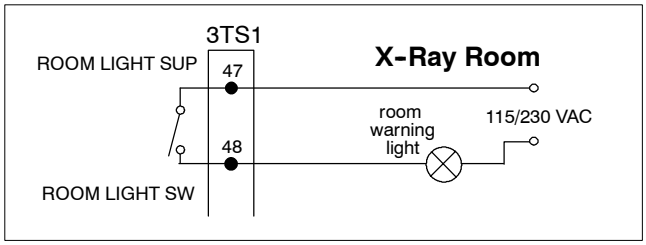
Interconnection with external control relay K1.

The relay K1 (radiation warning indicator) must be ordered seperately.
Code No. 4512 100 45231 (or supply locally).

Respect the polarity for diode (1N4007) in accordance to 24 V / GND.



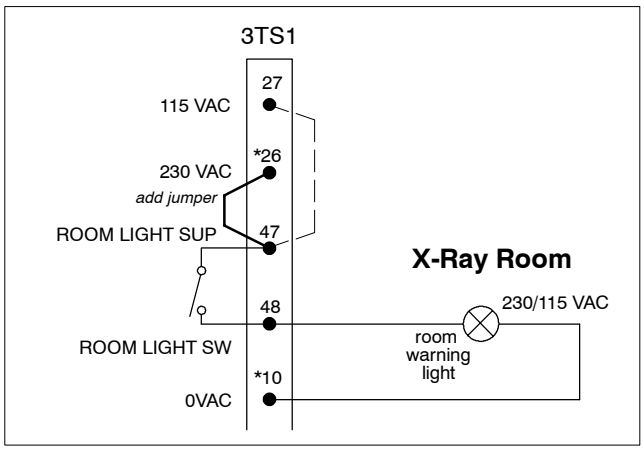
Interconnection of generator interface with internal control relay and externally power supply.



Interconnection of generator interface with control relay and internally power supply ~ (60 W = P_{max}).

- Select the power supply on 3TS1 according to the lamp voltage (230 V-3TS1:26; 115 V-3TS1:27).

  Power rating for external warning light = max 70VA.



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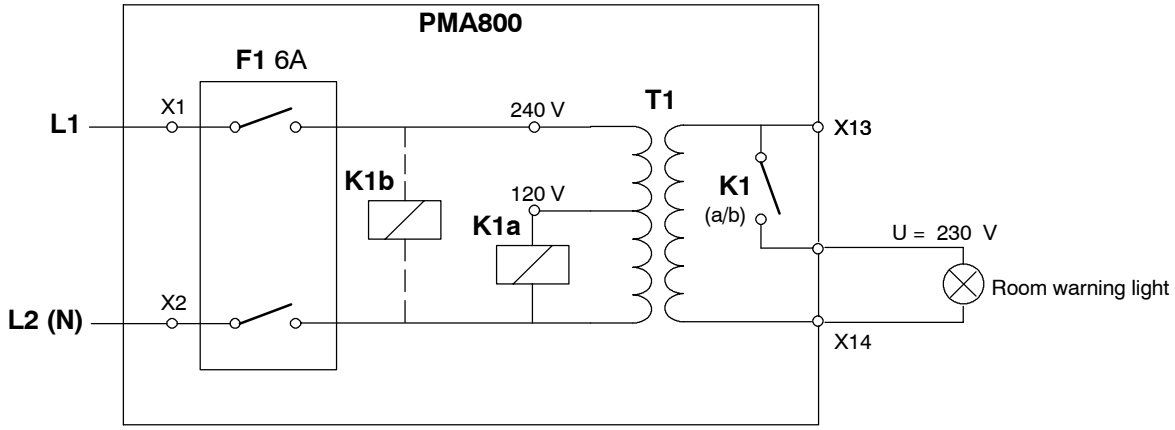
1.2.3. Room Interface - “room in use”

NOTE

Room warning light is released with “generator powered ON”. = Room in use.

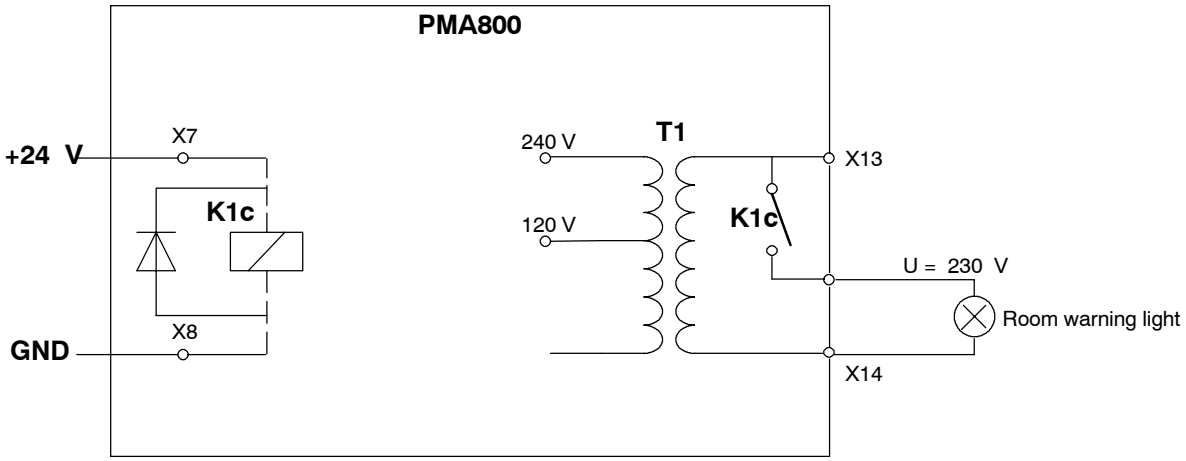
For K1a = 120 VAC / K1b 240 VAC Relais



NOTE

K1 (a/b) must be supplied locally.

For K1 c = + 24 V DC



K1 = Code No. 4512 100 45231 or supply locally

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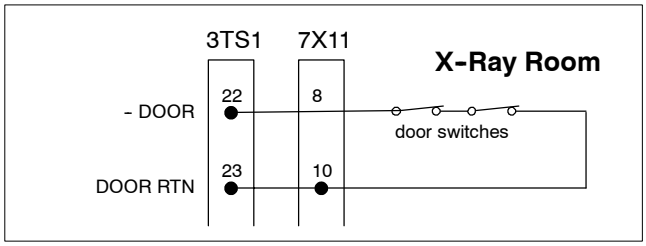
Interconnection of door switches.

If there are no door switches bridge 8 to 10 at 7X11. If this bridge is missing, the generator shows “no ready” condition.

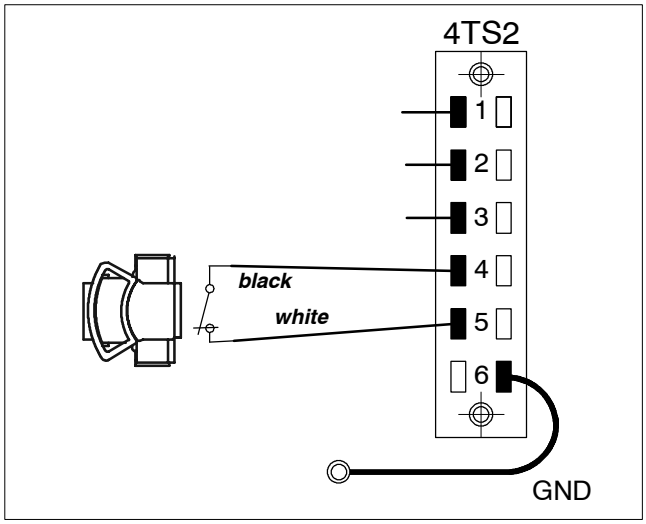


1.2.4. Tube Thermo Switch

An X-ray tube is provided by the thermostat or pressure switch signal, cable(s) must be connected to the terminal block 4TS2 in the power cabinet:

THERMOSTAT WIRES	TERMINAL 4TS2
THERMOSTAT SIGNAL 1	4TS2-4
THERMOSTAT COMMON (GND)	4TS2-5

If an X-ray tube is not provided by the thermostat signal, bridge both terminals in the terminal block 4TS2.



■

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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06321

3-1... 3-3 (02.0)

Stator Connection at Generator Side

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1. Stator Connection at Generator Side 3-2

1.1. Stator Connection at Tube Side 3-3

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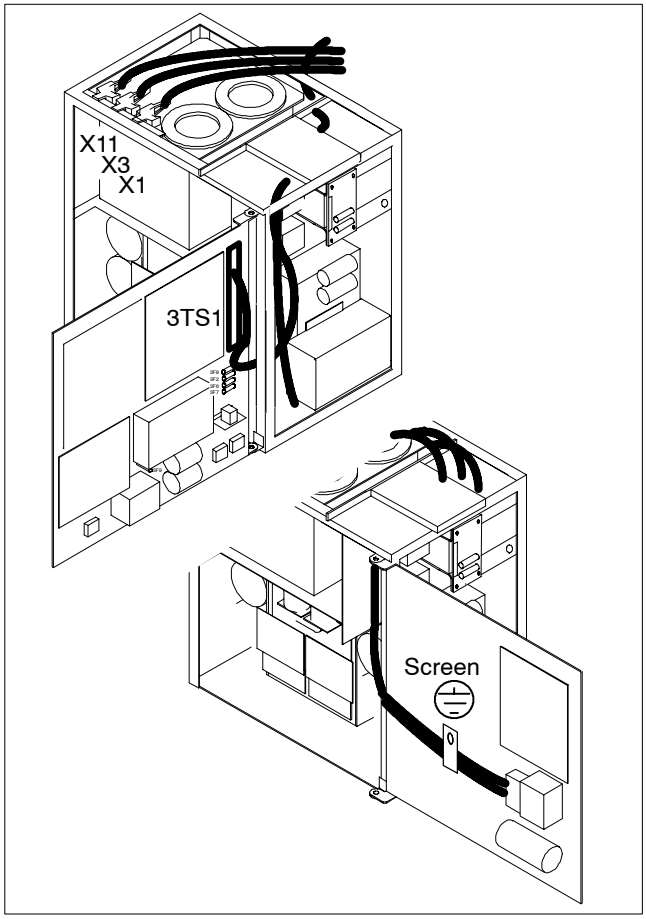
1. Stator Connection at Generator Side

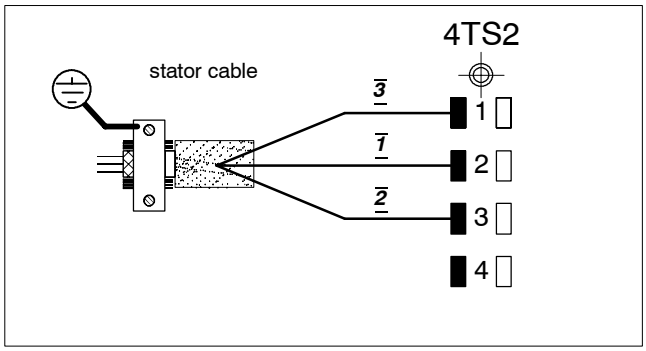
- For cable routing see sketch.

WARNING

Use screened cables.
Connect the screen to earth at both ends.
Do not mix up with the phases; otherwise, components of the rotor control may be destroyed.
Shorten the stator cable to the reuired length.
Keep enough length to open the module panel.



- Connect
  - wire $\overline{1}$ to 4TS2 pin 2
  - wire $\overline{2}$ to 4TS2 pin 3
  - wire $\overline{3}$ to 4TS2 pin 1
  - screen to ⏚



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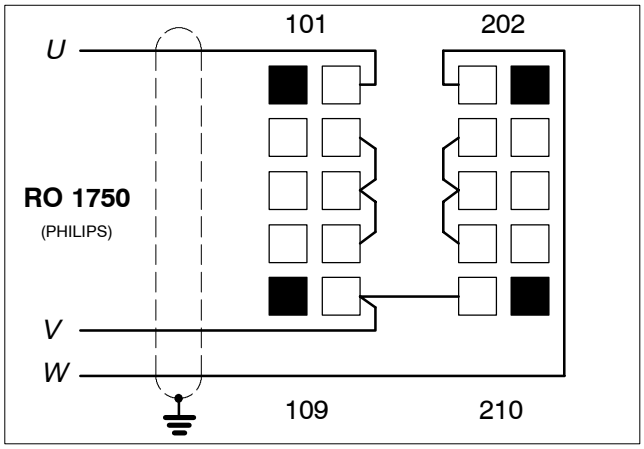
1.1. Stator Connection at Tube Side

In case the tube is delivered with the system, the connections are already done at factory.

At the tube end:

- Place the jumpers across terminals 100 and 200 accordingly.
- Connect the stator cable.
  Use: wire ***1*** for phase **U**
  wire ***2*** for phase **V**
  wire ***3*** for phase **W**
- Earth the screen of the stator cable at the tube housing with the metallic clamp.



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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06331

3-1...3-5	(03.0)		
Z1-1	(01.0)	A3	4512 983 06221
Z-7.2	(02.0)	A3	4512 982 0014.

H.T.-Unit

Contents

1. H.T.-Unit 3-2
1.1. H.V.-Generator 3-2
1.2. X-Ray Tube 3-3
2. Main Connection 3-3
2.1. Resistance Check 3-3
2.2. Earthing of PMA 800 - Generator - bucky TS 3-4
2.3. Main Connection 3-4
2.4. Installation of Emergency Switch 3-4
3. Connection between control desk - generator cabinet side. 3-5
3.1. Programming 50 / 60 Hz on control desk 3-5
3.2. VA audible and visible alarm 3-5
3.3. Connection for AEC J1 / J2 3-5

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1. H.T.-Unit

CAUTION

The terminal pins of the high voltage cables are extremely sensitive to damage. Take particular care of handling them. Ensure that they are straight and the ends of the pins end up parallel.

1.1. H.V.-Generator

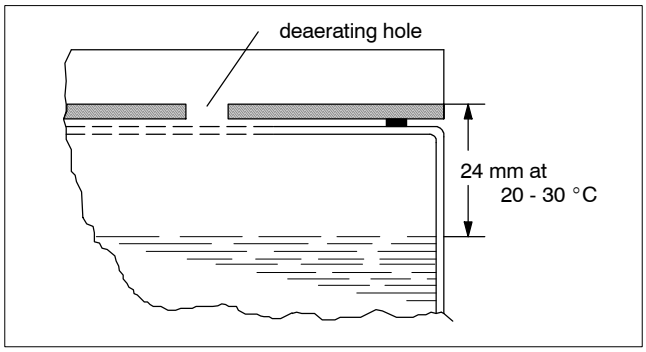
CAUTION

Do not tilt the H.V. generator when transporting it!

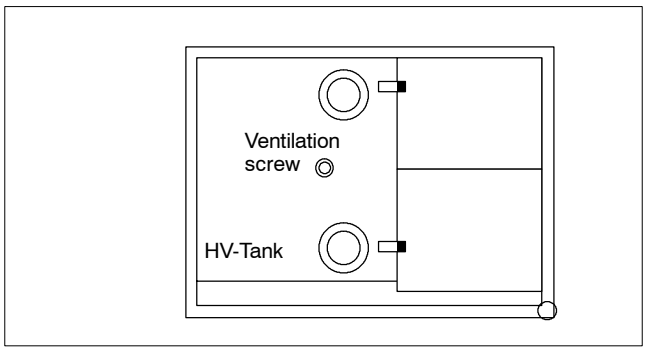
In case a tilting angle of 45° has been exceeded, the setting-to-work of the generator can be started not before a waiting time of about 8 hours has passed. Otherwise the H.V. generator may be destroyed by electrical spark over!

- Unpack generator cabinet.
- Unpack the H.V. generator.
  In case oil is visible on the high tension tank,
- check oil level in the H.T.-tank,
  tolerance: 24 mm ± 2 mm
  Oil: Shell Diala G in 2.5 l container
  4512 148 43172

  Make sure that no foreign matter falls into the oil!
  Otherwise the transformer must be exchanged!



- Remove the named “vent.” (ilation) screw.
  The screw should only be inserted while moving the generator.



- Check oil level at the anode and cathode cables.

  If there is not enough oil at the plug connections open the oil plug at the HV transformer and remove with injector some oil from the transformer side.

  Anode and cathode cables are furnished according to the room layout (length of the cables).

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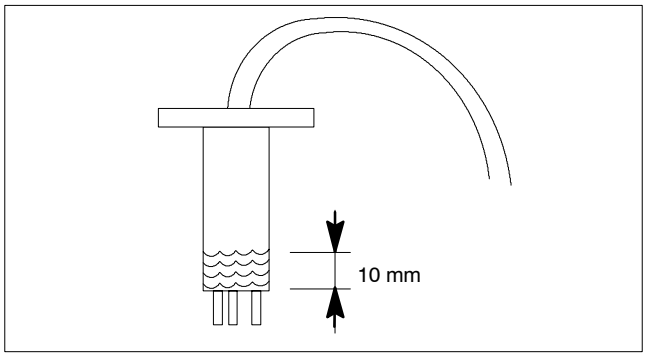
- Put approximately 1 cm (0.5”) of HV-oil in the HV-transformer plug connections.
  Do not use a silicone washer.
  Do not grease the plugs with silicone.



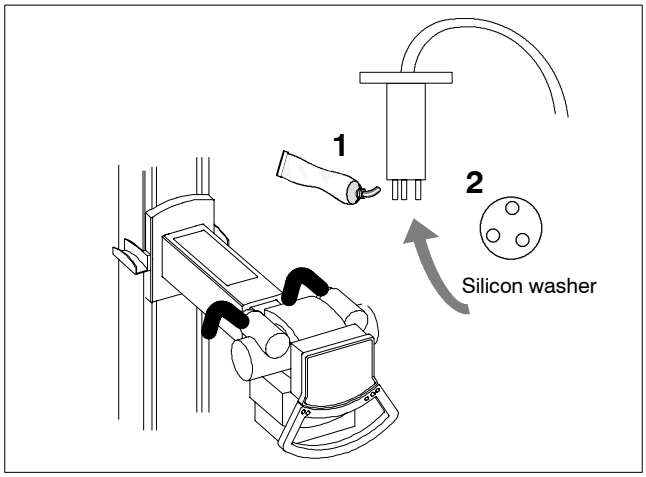
- Carefully connect the anode and cathode cable of the X-ray tube to the respective HV-transformer plug connection. Ensure that all connections are done correctly, respect polarity.

- Tighten the cable nuts securely.

1.2. X-Ray Tube

- **1** Grease only the top of the H.T. connector with the delivered silicon grease.

- **2** Position the silicon washer to the H.T. connector.



- Carefully connect the anode and cathode cable to the respective X-ray tube plug connection. Ensure that all connections are done correctly.
  Respect the polarity of the anode and the cathode.
- Tighten the cable nuts securely.

2. Main Connection

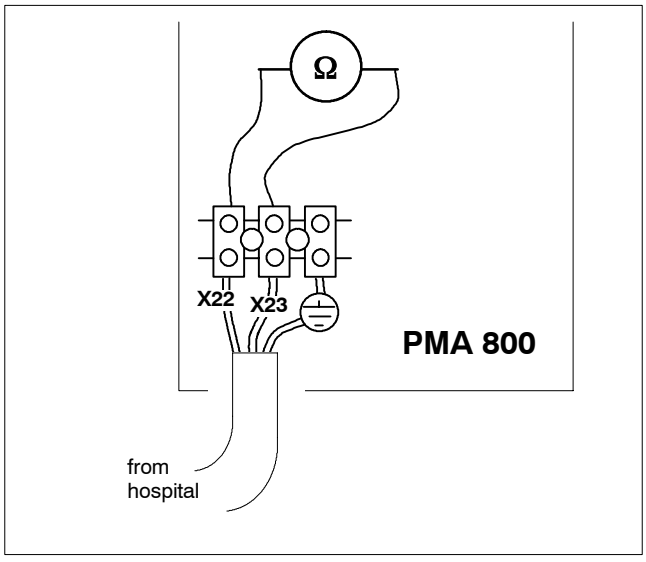
2.1. Resistance Check

- Check the mains resistance measured on PMA 800 X22 to X23.

U_{mains} = 208 V
- U_{mains} = _____V
- R_{XG} = _____mΩ ($\leq$ 64 mΩ)

U_{mains} = 230 V
- U_{mains} = _____V
- R_{XG} = _____mΩ ($\leq$ 74 mΩ)

U_{mains} = 240 V
- U_{mains} = _____V
- R_{XG} = _____mΩ ($\leq$ 84 mΩ)



NOTE

6 mΩ will be added by 6 cm cable length from PMA 800

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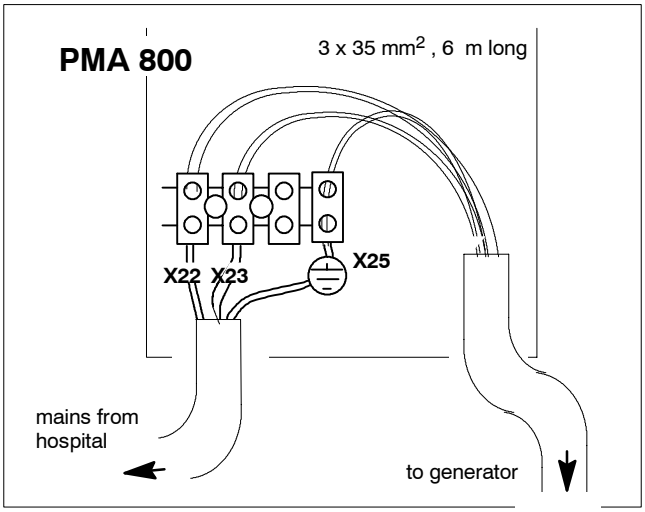
2.2. Earthing of PMA 800 - Generator - bucky TS

See "Earthing Diagram Z-7.2".

- Secure the power supply of the electrical room installation is **OFF**.



2.3. Main Connection

- The generator is prepared at factory side with a main connection cable 3 x 35 mm^2, 6m long. Connect the main cable wires at the PMA box as delivered to the generator.

CAUTION

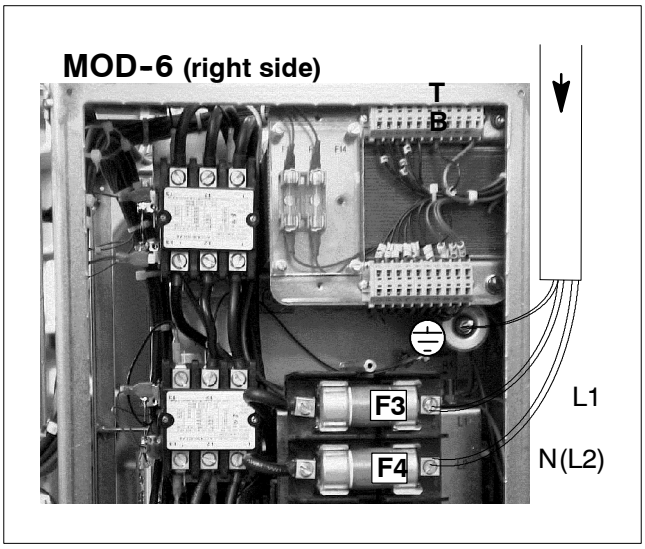
The generator is factory set to 240 VAC line voltage for single phase.

CAUTION

F4 is linked at factory.

N is present.

In case L2 is present, insert F4.



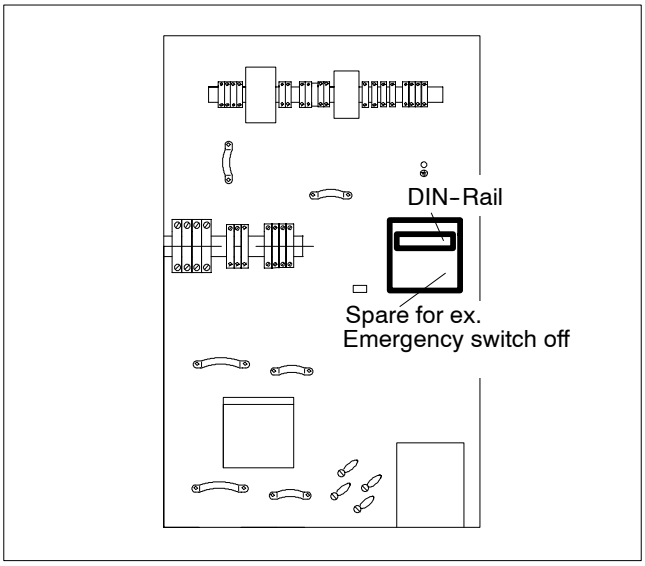
2.4. Installation of Emergency Switch

If a emergency switch must be required locally use the space (DIN rail) in the PMA 800.

All cable routing and connections have to be done in regulations locally.

- Secure the emergency switch has been connected to the room electrical cabinet so that it cuts the power to the generator when it is switched **OFF**.

- For technical details refer to Z1-1.



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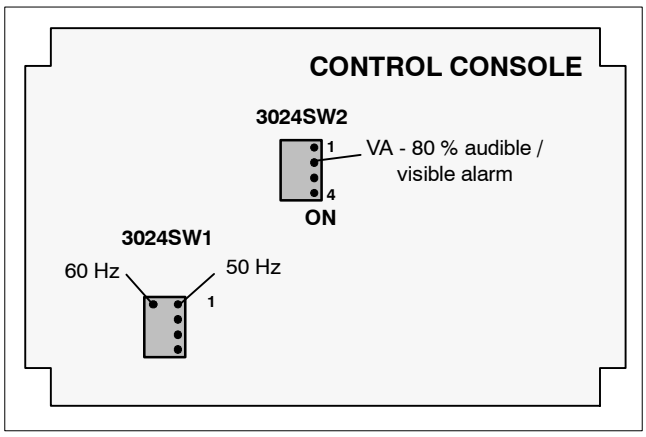
3. Connection between control desk - generator cabinet side

Control desk		generator cabinet
GND - 8	———	GND - 12
J1	———	6J2
J2	———	3TS1 / 4TS2 connected at factory side
J3	———	6J3A / 6J3B
J5	———	7A1 : J4

3.1. Programming 50 / 60 Hz on control desk

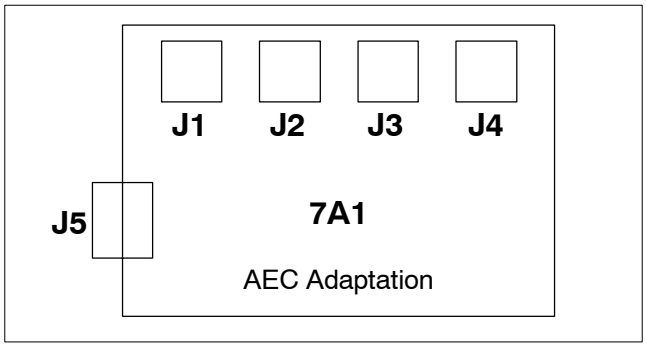


3.2. VA audible and visible alarm

When 80% tube load is reached. The system is indicating this limit with an audible and visible signal. Programming for this function via dip switch 3024 SW2-2 control desk to ON (closed) position.

3.3. Connection for AEC J1 / J2

Connect the J1 - Amplimat table and
J2 - Amplimat BWS to
AEC adaptation board 7A1 on generator cabinet side.
J4 - Supply from control desk
J3/J5 - Not used



■

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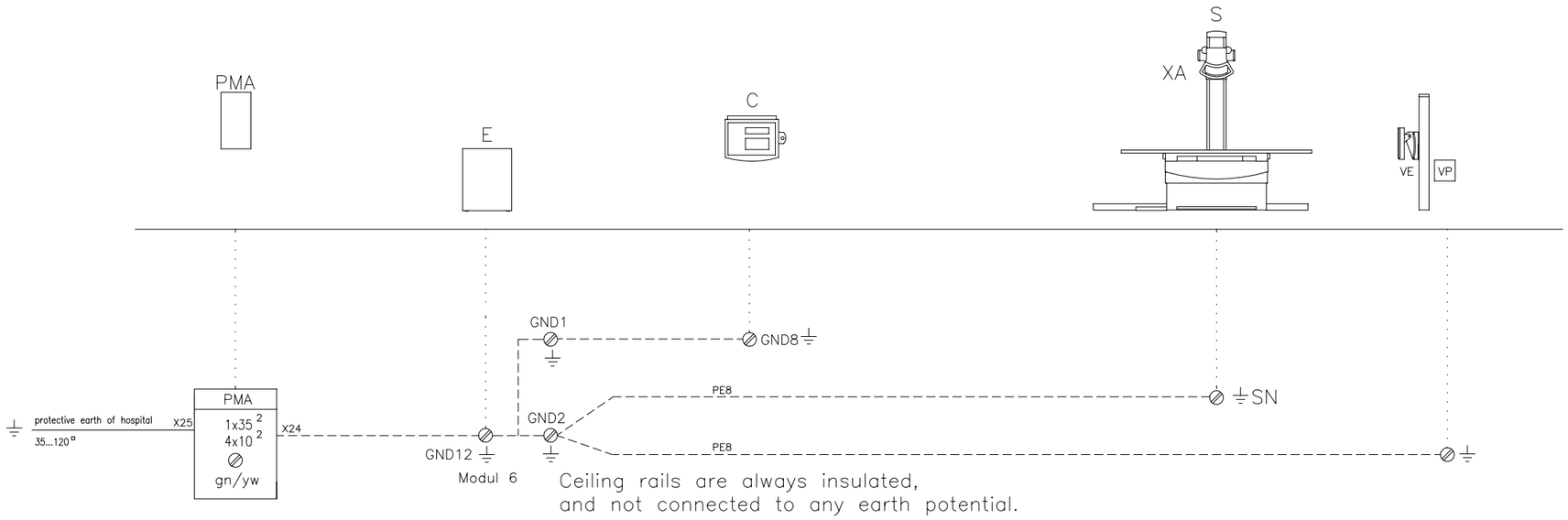
F= ≤16A
L1
Main
N (L2)
F1
6A
X1
X3
X2
X4
X5
X6
Motor protection switch
T1
B0004145
F2
3.2A slow
120V
208V
240V
X11
X15
X13
X16
X14
X12
X11/12 if 230V main is present
connect direct without Trafo T1
L (230)
L
output
230V
Bucky TS
N (230)
N
3TS1:17
7X11:4
X7 =24V +
F3
0.63A slow
X9
D1
X10
K1
D2
24VDC
3TS1:18
7X11:7
X8 -GND-
Module 2
PMA 800
emergency off
switch
(supply it locally)
X20
N (L2)
L1
X21
X22
X23
X24
PE
X25
X26
X27
X32
U= 120V...240V
Input
4...10□
X28
X29
X30
X31
with ESU to
OPTIMUS 30
generator
3 x 4mm²-6m
X17
X18
X19
X20
Spare for X-ray room
light and
emergency off
POWER INPUT TRANSFORMER
T2
240 VAC
230 VAC
110 VAC
60 VAC
0 VAC
220 VAC
115 VAC
0 VAC
19 VAC
0 VAC
208 VAC
10.4 VAC
0 VAC
28 VAC
26 VAC
24 VAC
22 VAC
20 VAC
16 VAC
14 VAC
12 VAC
0 VAC
Shield Stud
POWER
LAMP
6NL1
F2
T 1.5A
F8
T 3A
F6
T 3A
F7
T 3A
115 VAC SW
220 VAC SW
K3
LF3
F9
T 0.4A
LVDC POWER SUPPLY
PS1
jumper
+5V
+12V
-12V
GND
BR4
BR2
BR1
C7
2,4 MF
C6
2,4 MF
+24V-PSU
+24V
24 VAC TR
0 VAC TR
(S4-D1)
+SUPPLY
-SUPPLY
(S3-E1)
Module 3
6P2
(S3-C4)
-PWR OFF
-PWR ON
+12V
-12V
+12V UNR
+12V UNR
GND
GND
GND
TS1
+24V
-12 V
+12 V
220 VAC SW
115 VAC SW
220V/115V
external
supply for
Room RAD
indication
L1
T1
0 VAC RTR (S5-F3)
60 VAC RTR
220 VAC RTR
(S5-F4)
F13
T 10A
F12
T 10A
F3
T 50A
F4
T 50A
N
R1
20 ohm, 100w
LF1
MAINS
LOAD
GND -12
DELAYED
+24V
K5
K6
-CHRG DR
(S3-D4)
J3
10
-LINE CONT
(S3-B4)
* Connected to: - 110V AC for stand alone option
- according to mains without stand alon
Module 6
AC2
AC3
C7
1 nF
C8
470 nF
C11
1 nF
CR2
CR3
R3
33 ohm
C5
470 nF
C6
470 nF
R4
33 ohm
R5
33 ohm
C9
470 nF
C10
470 nF
R6
33 ohm
BUS +
(S4-F2)
BUS -
(S4-F2)
350V (±10%)
DC
Module 5
A5 INPUT RECTIFIER BOARD
* In Case N is present
Fuse F4 is linked.
Mains circuit
OPTIMUS 30 Single phase
and bucky DIAGNOST
(1~208/230/240V)
A3 01-04-10 Schr.
4512 983 06221 (01.0)
©Philips Medical Systems
Z1-1



PRB-XR-D systems

A3 02-07-25 Ost.
4512982200142_z7_2_020

bucky DIAGNOST TS, VE
OPTIMUS 30 single phase
Earthing diagram

Z-7.2

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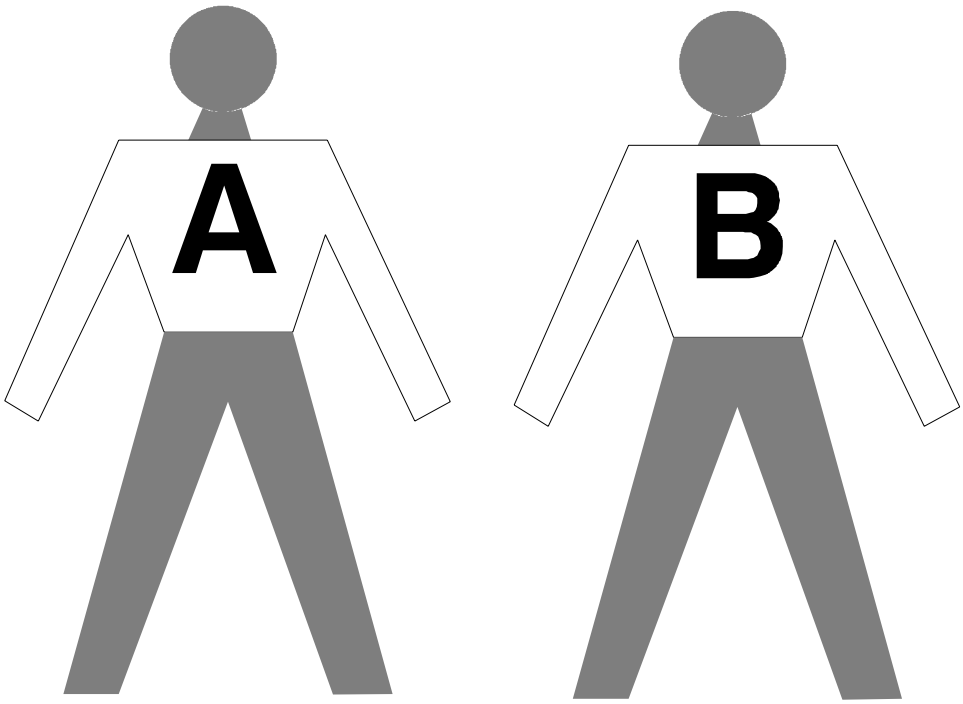
A
B

LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06001

4-1 (02.0)

Switch-ON

1. Switch-ON of the generator

- Switch ON the fuses present at the clinic.
- Switch ON automatic circuit-breakers ENF1, ENF2 and ENF3.

  The yellow LED on EN100 power ON circuit must be illuminated.

■

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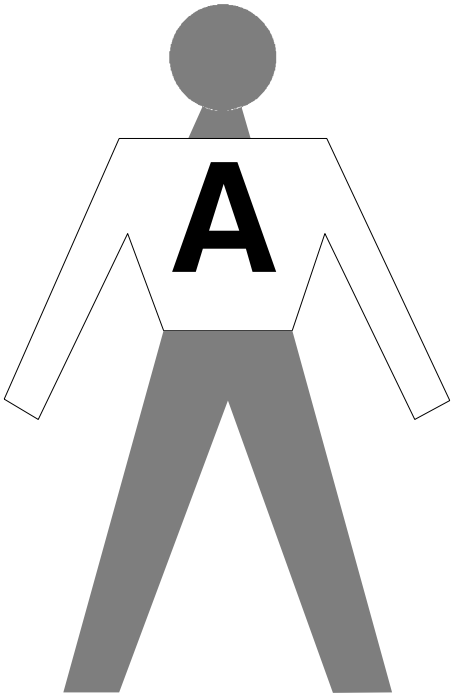
A

LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-02751

4-1...4-5 (03.0)

Selftests

Contents

1.	**Power-on Sequence and Stand-by**	**4-2**
1.1.	Generator Selftest	4-2
1.2.	Control Handle Selftest	4-3
1.3.	BuckyDiagnost TH Selftest	4-3
1.4.	Collimator Selftest	4-3
1.5.	Tomo Unit Selftest	4-4
1.5.1.	BuckyDiagnost TH, Tomography	4-4
1.5.2.	BuckyDiagnost CS2 / CS4, BuckyDiagnost FS, Tomography	4-4
1.6.	End of Selftest	4-4
1.6.1.	Generator	4-4
1.6.2.	System	4-5

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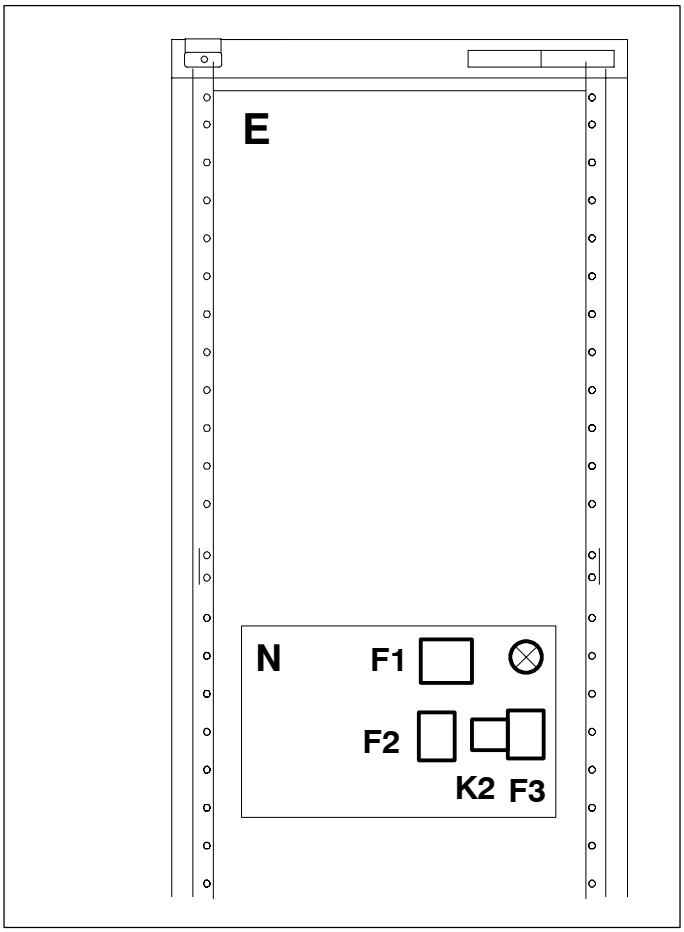
1. Power-on Sequence and Stand-by

The BuckyDiagnost system runs through a selftest after power-on.

- Switch **ON** the fuses present at the hospital.



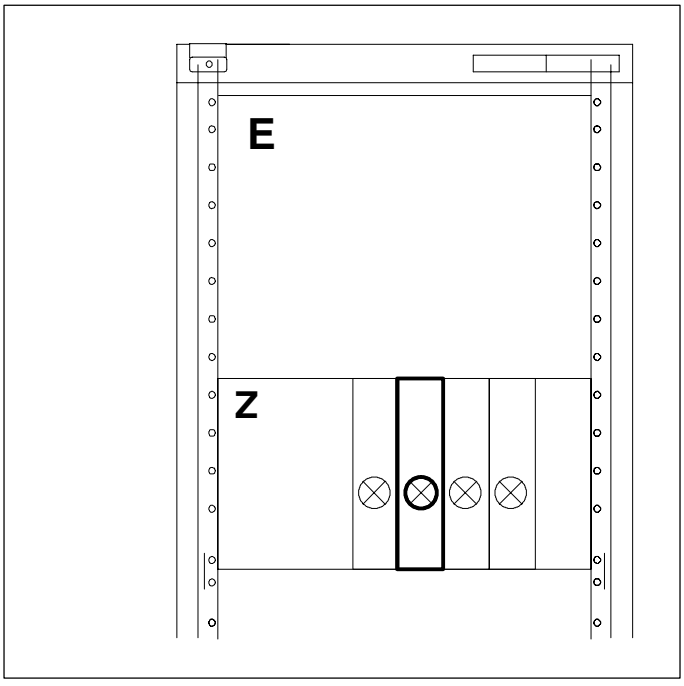
- Switch-on the system at the generator.
  - Switch **ON** automatic circuit-breakers **EN F1**, **EN F2** and **EN F3** if present.

The yellow LED **EN 100** lights on = Power-on.

The relay **EN K2** switches.

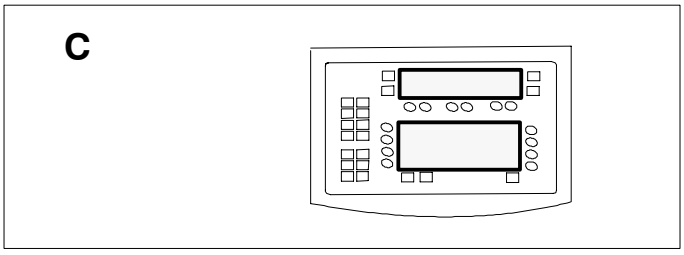
The selftests start.

1.1. Generator Selftest



In the starting phase all status LEDs on the **Z** rack flash.

A red illuminated LED indicates a selftest run.



On the control desk **C** all displays are illuminated temporaryly.

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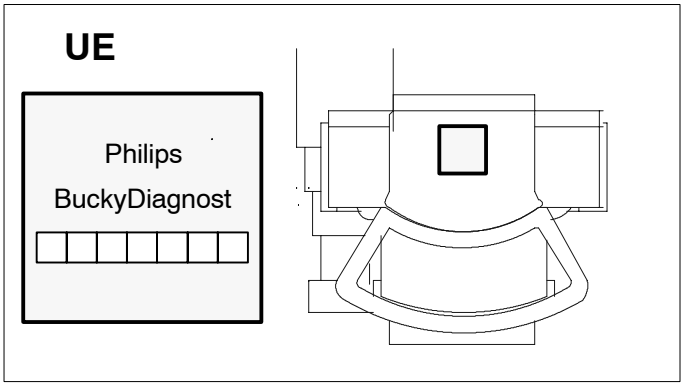
1.2. Control Handle Selftest

All displays of the optional control handle illuminate momently. The main display indicates the selftest running.

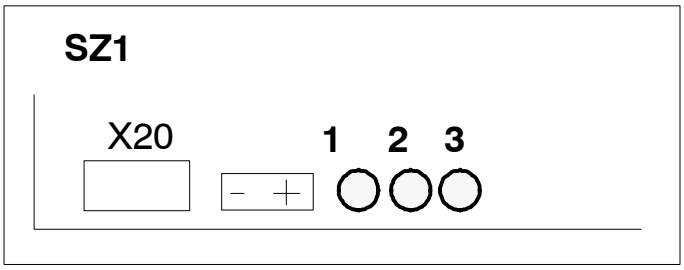


1.3. BuckyDiagnost TH Selftest

The red LED **1** lights up till the selftest is successful.

The yellow LED **2** flashes after successful selftest.

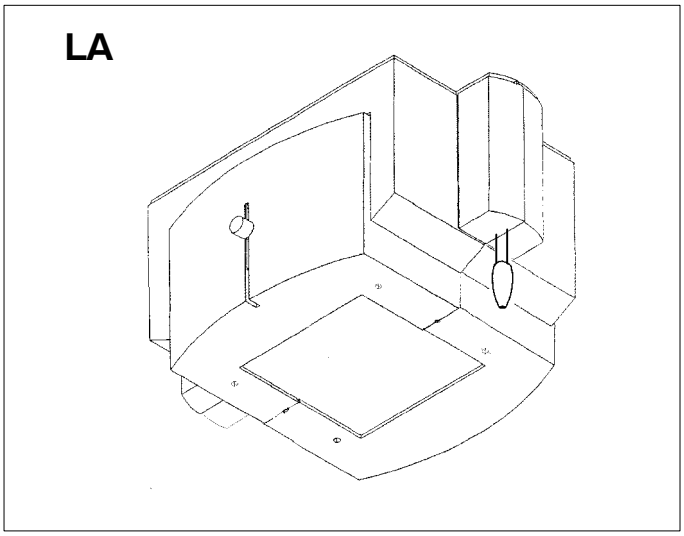
The green LED **3** lights up after successful selftest.



1.4. Collimator Selftest

The shutters open and close.

If the ruler is not rolled up, it rolls up and stops.



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1.5. Tomo Unit Selftest

1.5.1. BuckyDiagnost TH, Tomography

The tomo drive bucky modul moves the cassette tray in the default position.

SAN1
UBN2

1.5.2. BuckyDiagnost CS2 / CS4, BuckyDiagnost FS, Tomography

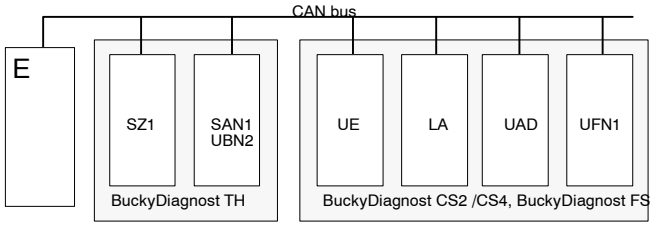
UFN1

The selftest of tomo drive longitudinal and the tomo drive alpha are running. LEDs on the drive boards indicate the selftest running.

1.6. End of Selftest

At the end of the successful selftests the status LEDs are blinking.

The system components are signal connected parallel via the CAN bus.



1.6.1. Generator

The red status LED lights off = system is ready.

The relay **EN K1** switches on.

The external switches are checked:
- unit ready
- door contact ready = closed
- thermal tube contact ready = closed
- tube ready = not overloaded

E

N

The READY lamp on the display of the control desk lights up = generator is ready.

C

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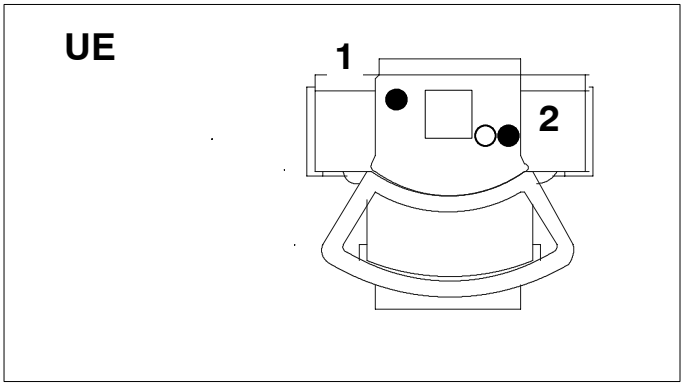
1.6.2. System



The green EXPOSURE READY LED **1** lights up = system is ready.

The control handle displays the last stored settings.

If the system is not ready press button **2** for test.

The control handle displays the failure.

■

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LIST OF PAGES AND MODULES

Module code number: 4512 983 07011

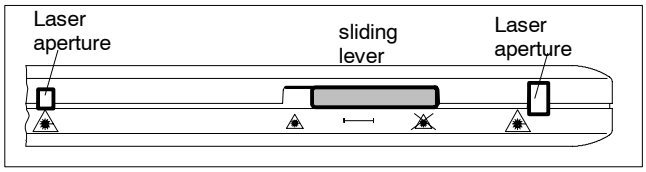
4-1 ... 4-4 (03.0)

Alignment of a BuckyDiagnost Floor System

WARNING

The light source of the light pointer is a Class II laser. Never look into the beam directly. With Class II lasers the eye is protected from brief, random glances into the laser beam by the eyelid closure reflex. Class II lasers may therefore be used without taking any further precautions provided it is necessary neither to intentionally look into the beam for a period longer than 0.25s nor to repeatedly look into the laser beam or directly reflected laser beam.

For continuous duty Class II lasers the maximum limit for accessible radiation is 1mW. The laser light is emitted from openings in the lower side of the controlhandle. The laser apertures are marked by the yellow/black laser triangle in close proximity to the laser aperture.



1. Centering the System

- Switch system **ON**.
- Fix the bucky table into the **system center position**.
- Fix the floor stand into the **system center position.**
- Switch **ON** the simlation light.

The cross line from the collimator and the cross line of the grid should coincide.
If necessary position the catch plates.

1.1 Alignment of the Table

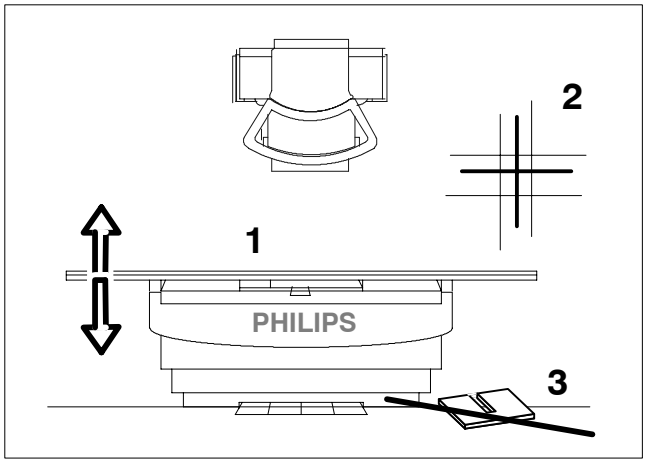
- Place a mirror on the tabletop **1**.
- Check coincidence of the cross to the bucky center position.

– Lower the bucky table to the lowest position.
– Raise the bucky table to the highest position.

The cross should not vary more than ±2mm out off center **2** at 1m SID.

- If necessary align the table **1** with balance plates **3**

– Repeat procedure as written before.



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1.2 Alignment to the Table

- Check the alignment of the telescopic system.

– Lift the tube arm to the lowest position.

– Lift the tube arm to the highest position.

The cross should not vary more than ±2mm to 1m off center.

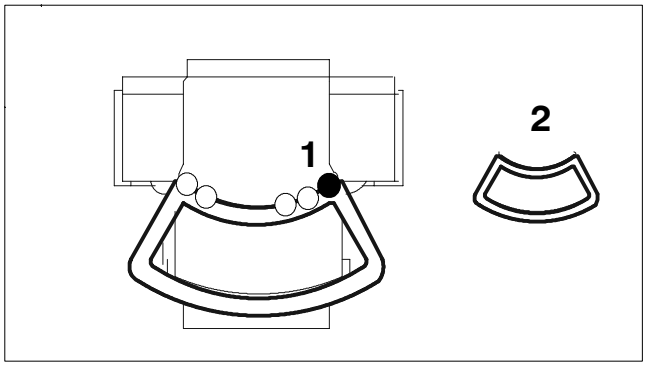
If the cross lays out of the center of the collimator.

- Align the tube by loosen screws at the holder or of the tube. Respect the direction of vary.

– Fasten srews, than repeat procedure.

- Remove the mirror.

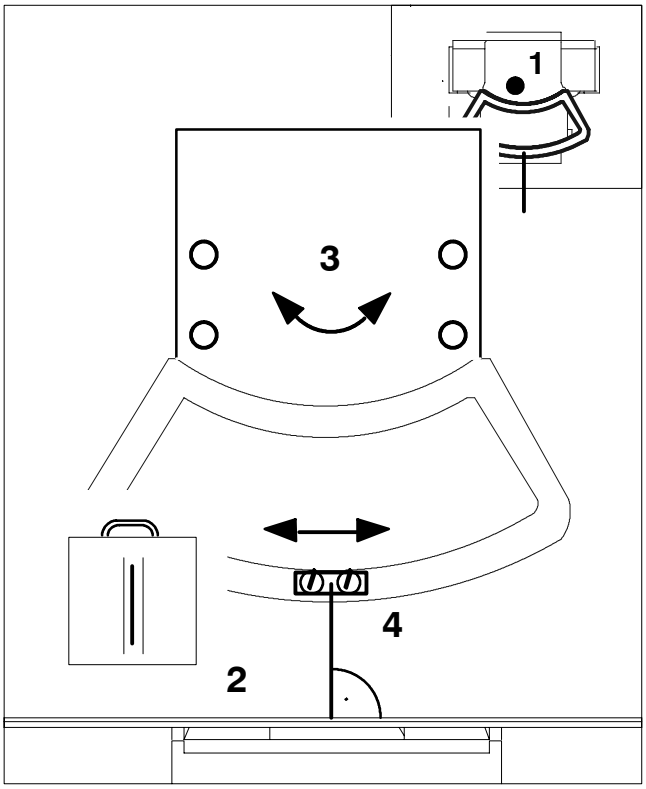
1.3 Laser Alignment



- Position the control handle on $\alpha = 0^{\circ}$ position, LED **1** = **ON**

- Remove the control handle grip **2** on the rearside by loosening screws and nuts

1.3.1 Center Laser Alignment



- Press button **1** = center laser and diaphragm light are **ON**

- Raise the table top up and down.
- Observe the center laser light on the table top.

– If the beam wanders **2**, rotate the control handle by loosening four screws **3** on the rear side

- Tighten screws, then repeat procedure
- Do the fine Adjustment.

– Loosen the two fixing screws **4** of the center laser

– Adjust the laser

– Tighten the two fixing screws **4**

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1.3.2 SID Laser Alignment

- Select the RGDV4 for free exposure **1**
  see **SID-Selection with Program X-Scope**,
  function **None** should not be selected !

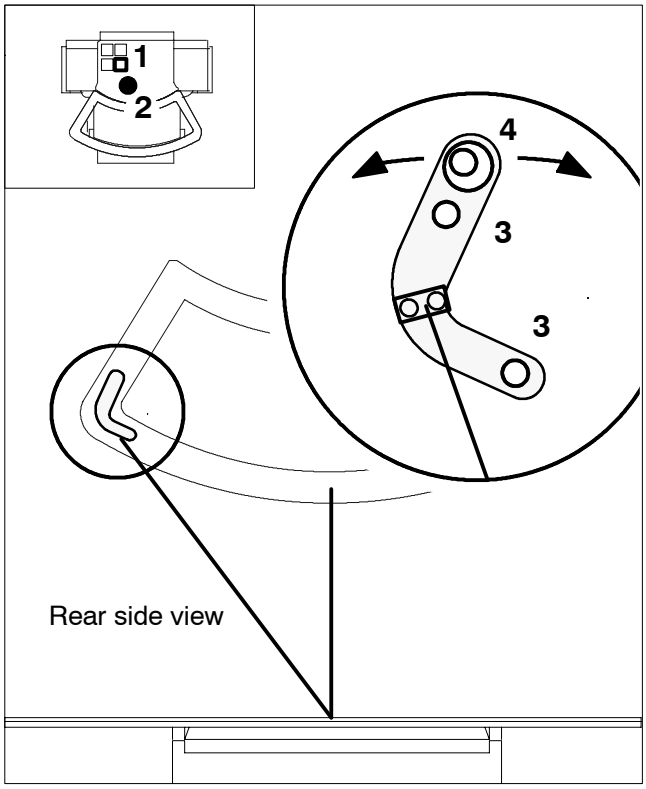
- Ask the operator for the prefered SID.
  The default adjustment as delivered is SID = 1100mm.

- Raise the table top into the prefered value of the SID = 900 ... 1200 mm

- Press button **2** = center laser and pulsing SID laser and diaphragm light are **ON**

- Observe the center laser and the pulses SID laser on the table top

- If the beams are not merged, loosen the two fixing screws **3** and adjust the SID laser with the eccenter screw **4**
- Tighten the two fixing screws **3**



1.4 Final Work

- Install the removed control handle grip on the rear side

Note

Ensure that the laser wires are not damaged by attaching the grip! If necessary, fix the laser wires with adhesive tape.

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2. Operation

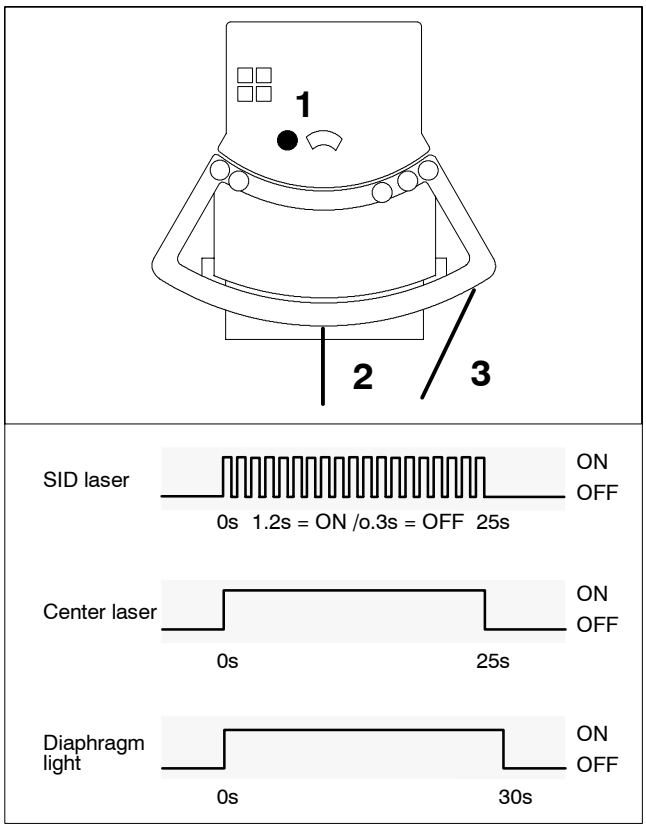
2.1 Function of the Laser

Depending on the stored-in function in the bucky controller via program X-scope, to SID laser can be activated.

Pressing switch **1** the center laser **2**, the SID laser **3** and the collimator light are activated. On the bucky table top the lasers **2** and **3** are drawing two lines. To find the fixed SID the table must be raised into cross laser lights, the two lasers will be merged.

The SID laser **3** pulses.

Note
The SID laser is available only if this function is selected. See also **Configuration with Program X-Scope**.

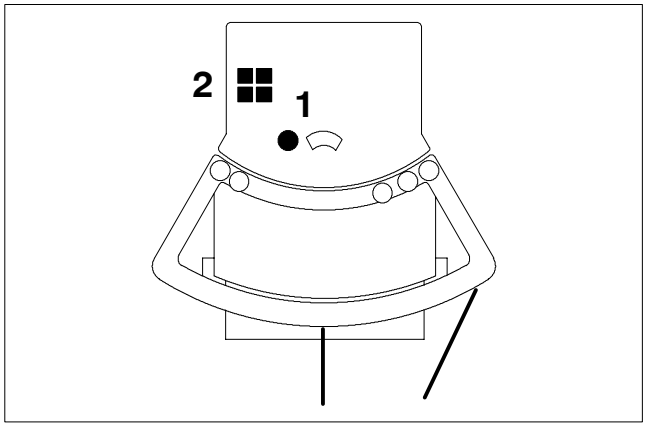


2.2 Operation with the Laser

- Select a RGDV, see **Configuration with Program X-Scope**
- Press switch **1** = laser **ON.**
- Raise the bucky table into cross lasers.

For other values of SID use the ruler of the collimator.

- Pull the measuring tape of the ruler against the bucky table top, release after buzzle signal.



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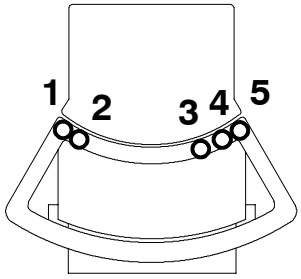
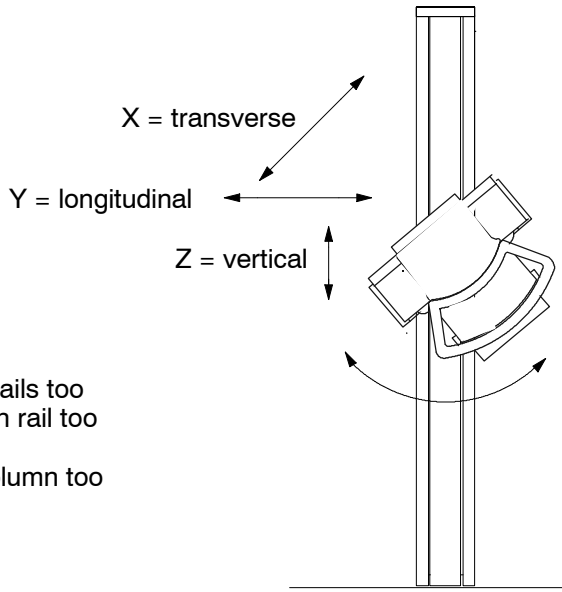
LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-07001

4-1 (03.0)

Convention of coordinate system

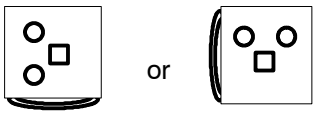




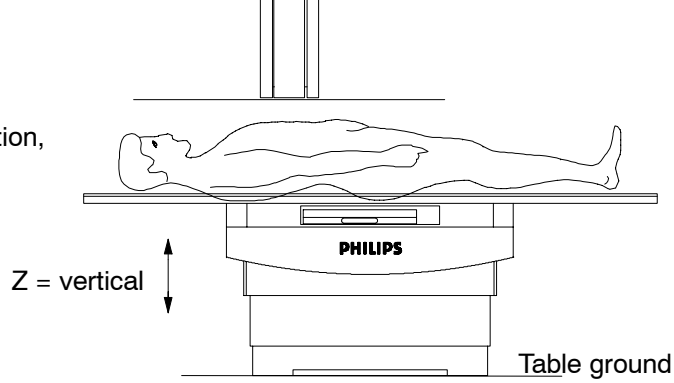
1 X = transverse, blue mark, on rails too
2 Y = longitudinal, green mark, on rail too
3 β = turn horizontal, violet mark
4 Z = vertical, yellow mark, on column too
5 α = turn vertical, black mark

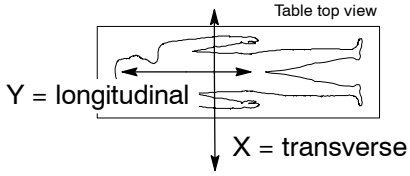
Center position of table bucky unit
= system center position + tomo center position, value of X = 0, value of Y = 0

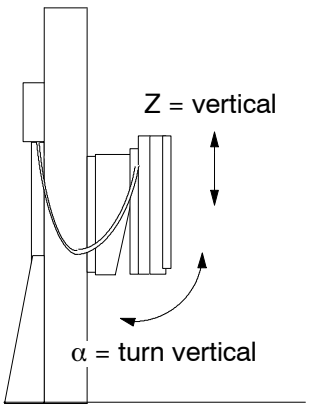
Table ground = value of Z = 0



= left hand version = default







■

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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-07071

4-1 (03.0)

Option Tracking

1. Option Tracking

The power supply for tracking is provided via the UZ field (Tracking is completely installed in the factory).

NOTE

For the adjustment of the tracking option refer to chapter 'X-Scope'.

■

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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-02891

4-1 (04.0)

Option Tomography

1. Option Tomography

NOTE

For the adjustment of the tomography option refer to chapter 'X-Scope'.

■

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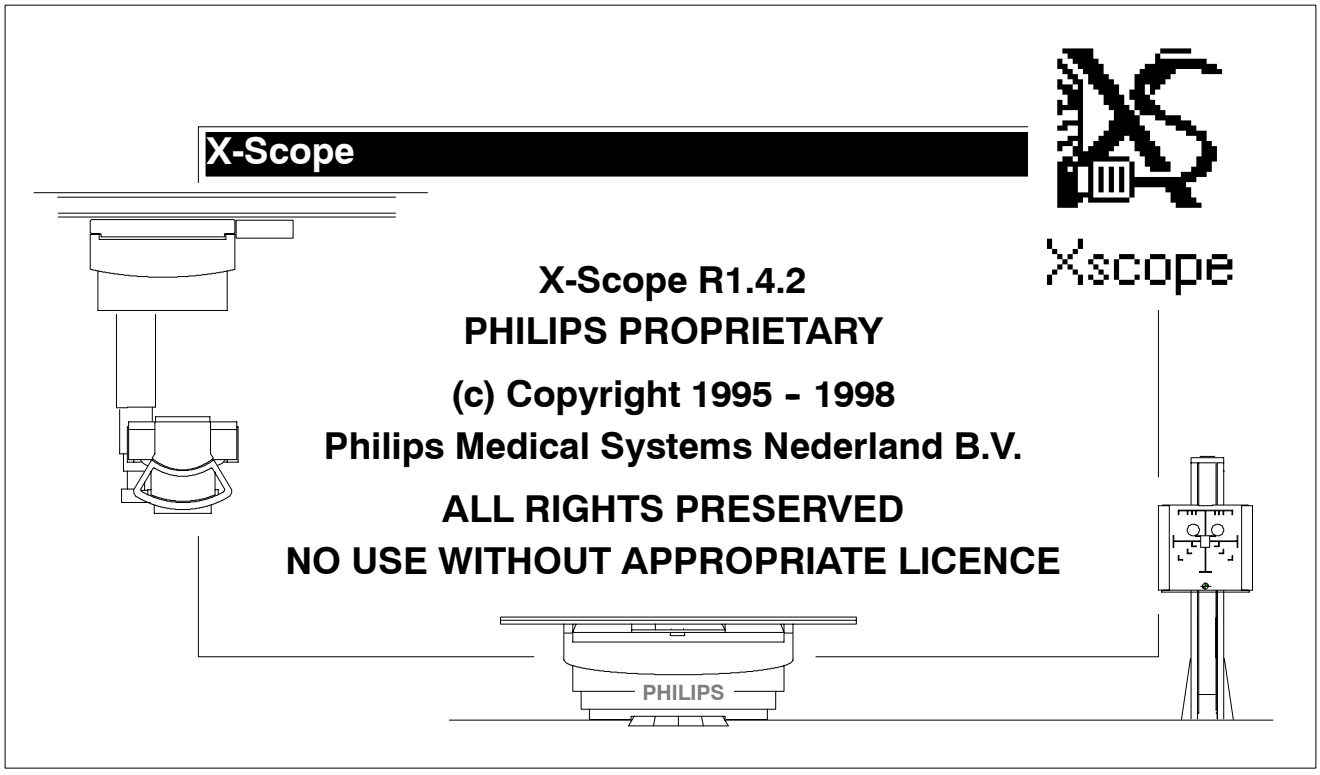
LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-05431

4-1...4-45 (04.0)

X-Scope bucky Controller

X-Scope R1.4.2 Code No. 4522 220 93272
for
BuckyDiagnost TH2, BuckyDiagnost FS
&
bucky controller firmware R6.2



X-Scope software, configuration and adjustment for systems with bucky controller

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1. General

The window includes several bars:

1 Communication bar

All information about the program X-Scope to the connected Bucky controller are displayed here.

2 Instruction bar

This bar shows help messages.

3 Status bar

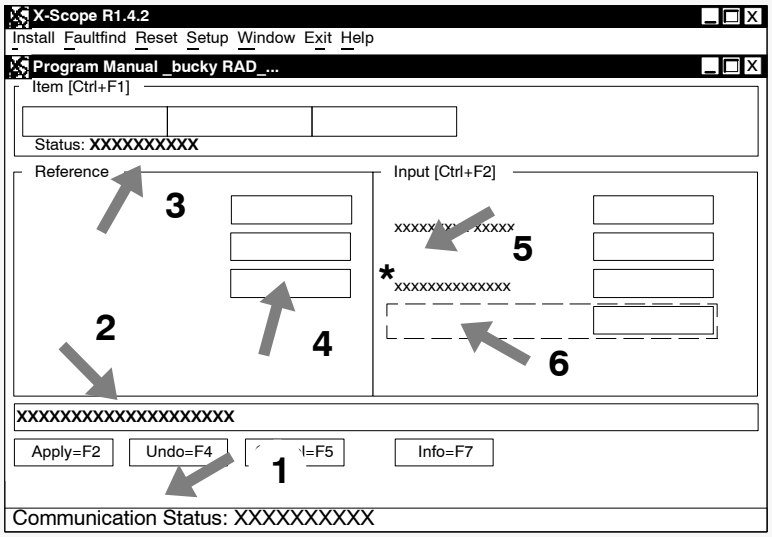
Internal information about operating conditions of X-Scope

4 Reference window

Shows active data

5 Faulty inputs are marked with "*"

6 The active input field is marked with a frame.



2. Program X-Scope

X-Scope is a computer-based windows program for various Philips radiography systems. This program supports system adjustments and allows the service engineer to assign various functions and parameters to the bucky system controller and the collimator.
All adjustments and data will be written into the bucky controller memory.

Functions of the program X-Scope

- Working with normal Windows conventions
- Installation of system parameter (programming)
- Adjustments of system devices
- Recording of errors, warnings and service data
- Button *Apply=F2* to write data to Bucky controller
- Button *Repeat=F4* to do the same stage again
- Button *Cancel=F5* to determine the step
- Button *OK=F3* to end the session
- Button *Undo=F4* to undo the changes after
  clicking on button *Apply=F2*

3. Compatibility

MS Windows ≥3.1

X-Scope R1.4.2

Bucky controller firmware R6.2

TOOLS		
1		Service PC with installed program MS Windows ≥3.1
1	4512 130 56931	X-Scope service cable

4. Convention

Terms in *italics* specify sequential steps to be performed.

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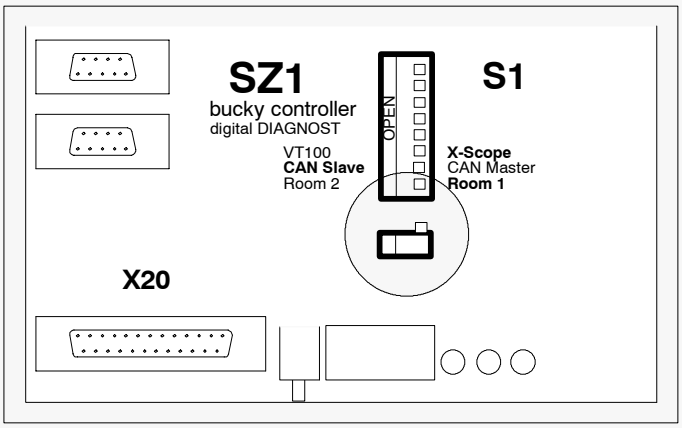
5. Installation

- Switch OFF System and PC.

- Check **S1** on the Bucky controller board **SZ1**, refer to figure on the right.

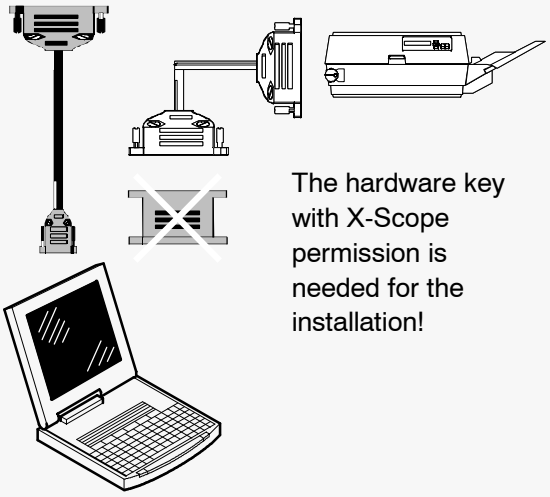


- Connect a data line from serial port COM1 to the Bucky controller **SZ1 X20**.

- Switch *ON* the Bucky system and the PC.

- Start MS Windows.

- Install program X-Scope according to the instructions delivered.

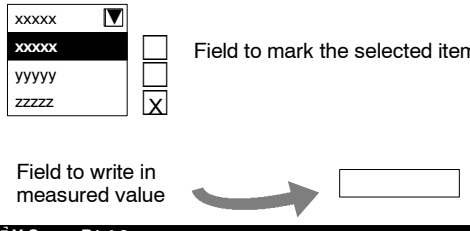


The hardware key with X-Scope permission is needed for the installation!

6. Introduction

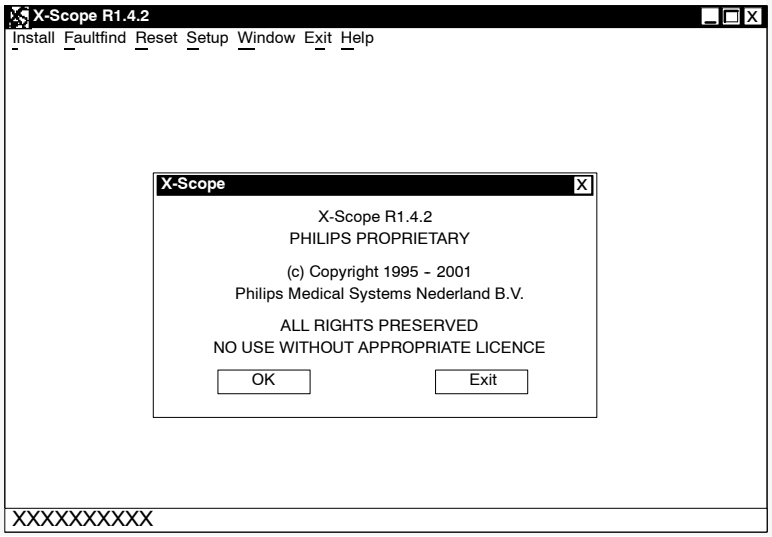
For setting up the system it is necessary to follow the instructions step by step as described in this manual. All devices must be selected correctly and entered in X-Scope. The parameters will be written into the Bucky controller memory.

Note down the values of adjustment items in this documentation in the respective fields. This makes configuration easier in case of a replacement.



7. X-Scope Start

- Start X-Scope



The X-Scope window appears.
The communication status bar informs about data transfer,
refer to screen bar xxxxxxxx

- *Click OK* or quit with *Exit*

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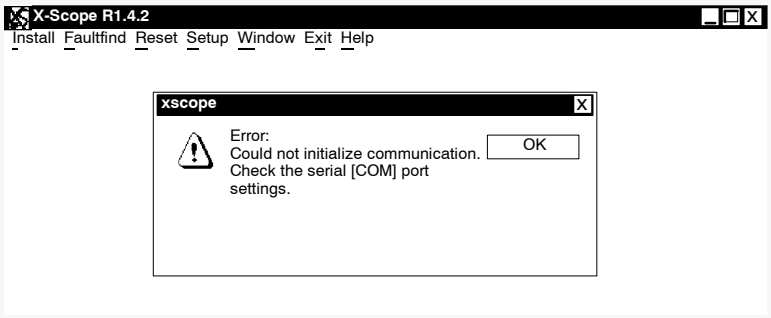
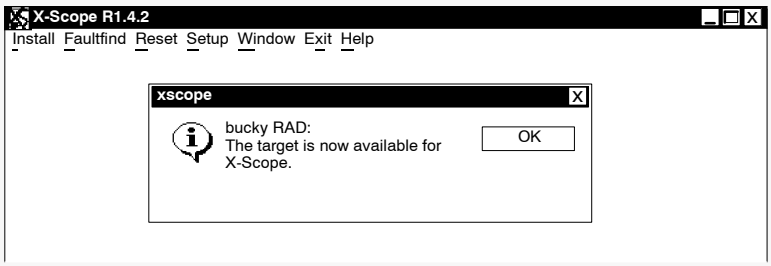
If an error occurs, try another port or check the settings.



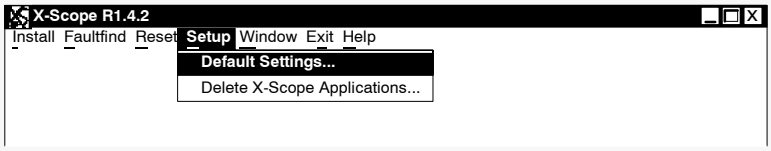
- *Click OK* or *Enter to accept the message.*
- Go on with
  8. “Set-up of Communication Port”.

- When the following window appears, the PC communication port is selected
- *Click OK* or *Enter to accept the message.*
- Proceed with 9. “Programming**“.**



8. Set-up of communication port

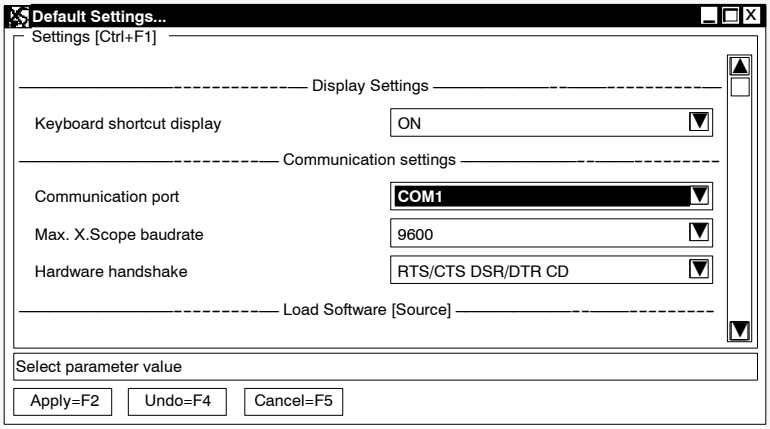
- Select *Set-up.*
- Select *Default Settings.*



- Change the communication port by pressing the ▼ button.
  - Highlight = *click on* the correct communication port.

NOTE

Use the other settings as shown in figure.

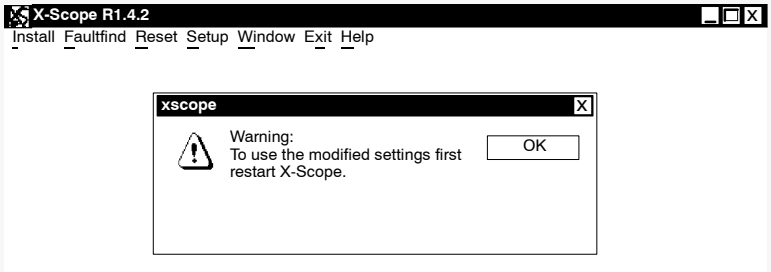


To store *on Click Apply=F2*

To recall *Click Undo=F4*

To cancel the sub-menu

- *Click Cancel=F5*
- *Click OK* or *Enter* to accept this message.
- Exit and restart X-Scope.



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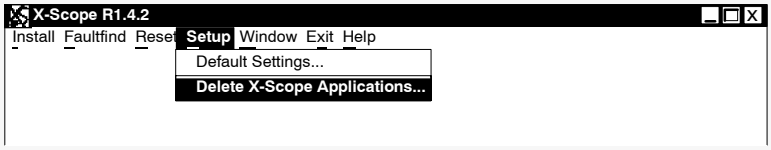
9. Programming

For the first time delete the X-Scope applications.

- Select *Setup.*
- Select *Delete X-Scope Applications.*
- Follow the instructions.

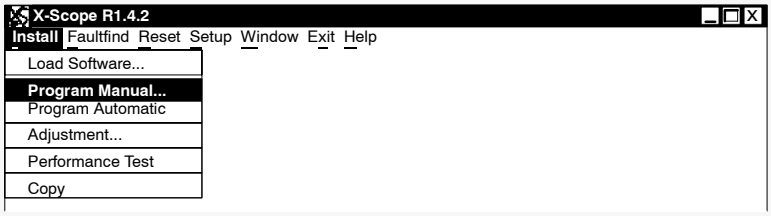


9.1. Manual programming

The sub-menus

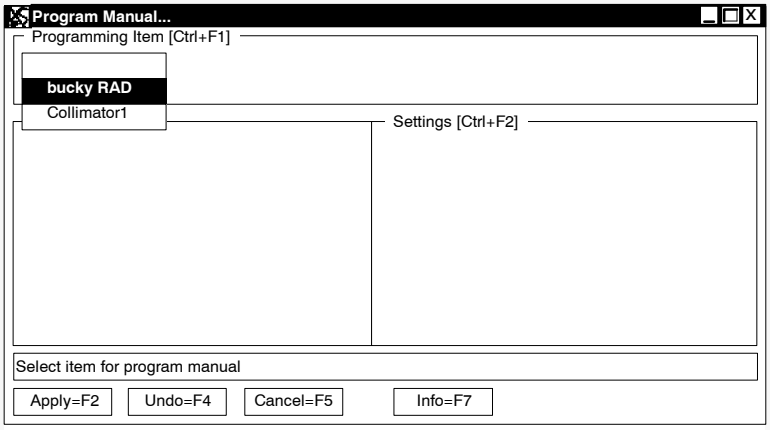
- *Load Software*
- *Program Automatic*
- *Performance Test*
- Copy

are not yet implemented.



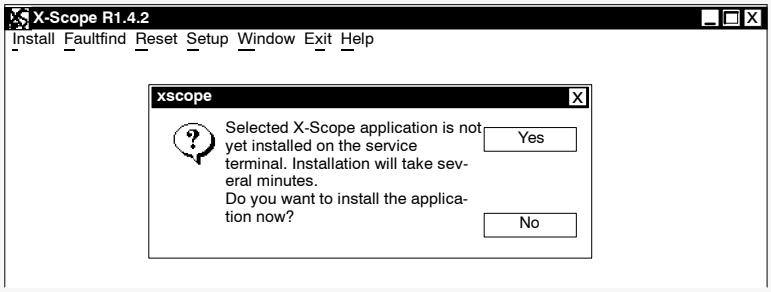
- Select *Install*
  - Select *Program Manual.*
  - Press *Enter* key.

- Select *bucky RAD and* press *Enter* key



If the window on the right appears the required application is not yet installed.

- Click *on Yes* to install the application. This will take about 5 minutes.


X-Scope R1.4.2
Install Faultfind Reset Setup Window Exit Help
xscope
Selected X-Scope application is not yet installed on the service terminal. Installation will take several minutes.
Do you want to install the application now?
Yes
No

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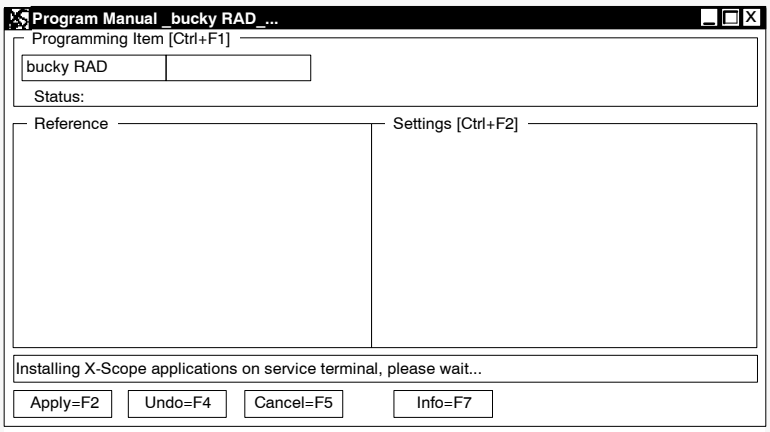
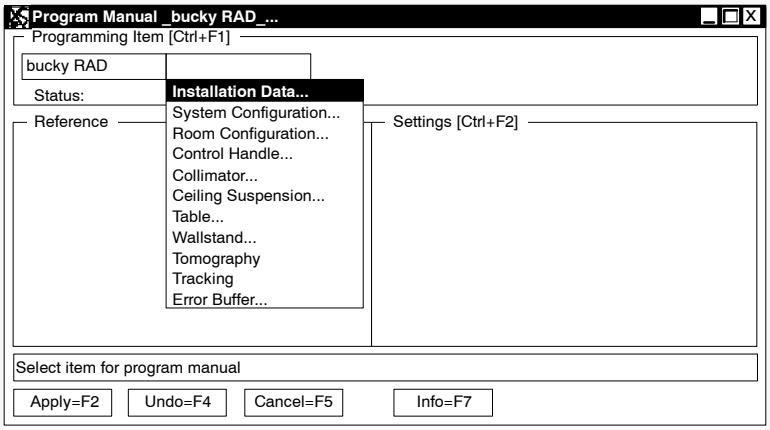
The window on the right indicates that the installation is still in progress.



X-Scope is ready now for programming.
The status menu appears.

If the applications are installed on the service PC an item can be configured.

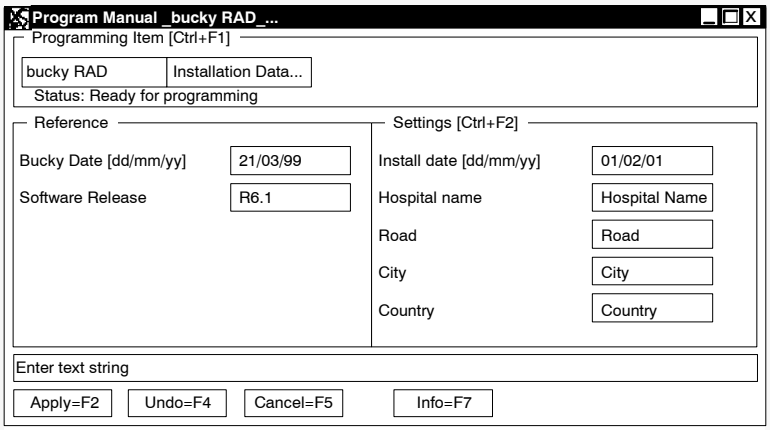
- Select required item.



9.1.1. Installation data

This sub-menu contains items related to the current Bucky installation such as the hospital name and address or the date when the system was installed.

- Select *Installation Data* with *double-click*



The following window appears.

- Enter the required data in the fields.
- To store *click* on *Apply=F2.*
- *Click on Installation Data to open the selected menu.*

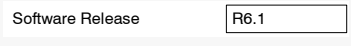


Figure shows the version of the inserted Bucky firmware.

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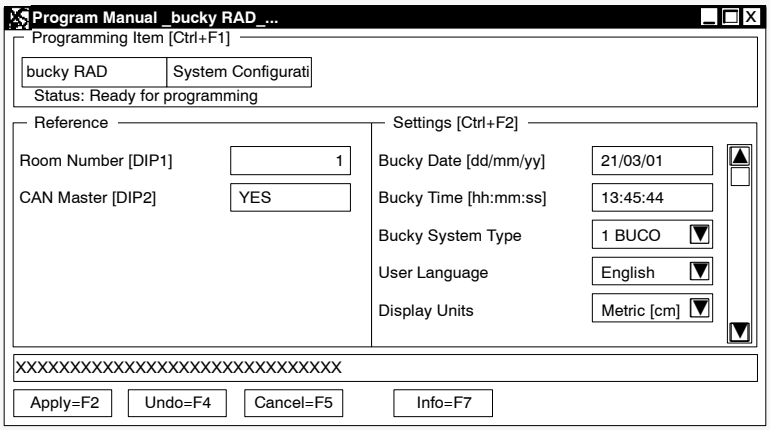
9.1.2. System configuration

This sub-menu contains all parameters having global effect on the whole Bucky system, e.g. the language or the real time clock of the bucky controller.

- Select *System Configuration* with *double-click.*

The following window appears.

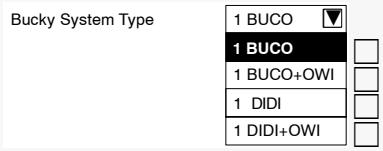


NOTE

The figures on the right show default values.

- Use the cursor to select the required item.

- For more selections use the ▼ or ▲ button.
  - Highlight the required setting.



1 BUCO = default
1 BUCO+OWI = connect via OWI
digital DIAGNOST TH
-"- + **O**ld **W**orld **I**nterface

User Language = Language indicated on the control handle display

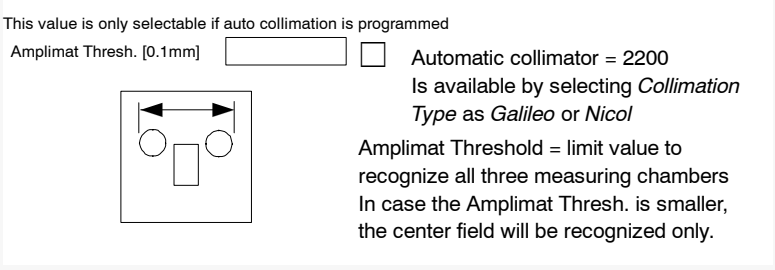
In case that imperial is programmed,

check the programming on INALFA Bucky unit board VA2.

Jumper setting : S1.1 = OFF = inch=Imperial
S1.1 = ON = metric

For selecting the collimation type refer to 9.1.5. “Collimator configuration”
After selecting *Galileo* or *Nicol* type in the value of *Amplimat Thresh.*

- To store *click Apply=F2.*



Automatic collimator = 2200
Is available by selecting *Collimation Type* as *Galileo* or *Nicol*

Amplimat Threshold = limit value to recognize all three measuring chambers
In case the Amplimat Thresh. is smaller, the center field will be recognized only.

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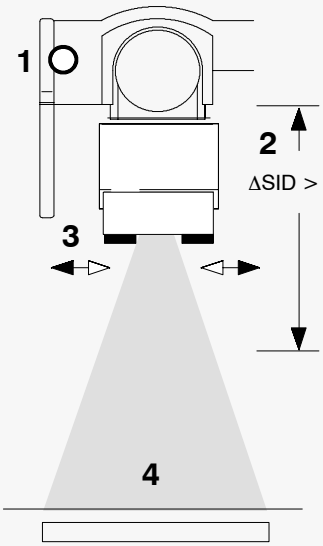
Click on *System Configuration* to open the selection menu.

PBL[+ve Beam Limiting] YES / NO / YES

YES = has to be selected in U.S.A.



ΔSID > ±20 mm

1 vary the collimation field
2 vary the SID value more than 20 mm

Exposition of the PBL = YES

3 shutters will limit the collimation field **4** to the full cassette size

Exposition of the PBL = NO

3 shutters will limit the collimation field to the collimation field size as before

Workstation-Fail Fallback NO

not available for bucky

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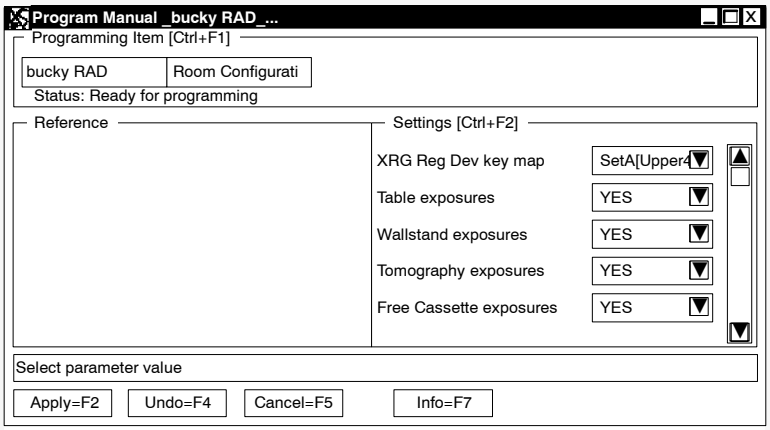
9.1.3. Room configuration

This programming item defines the existing devices.

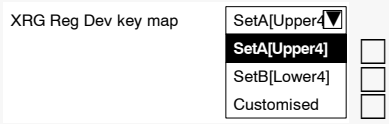
A programming item set to NO is shown in brackets in the adjustment menu.

- Select *Room Configuration...* with *double-click.*

The following window appears.



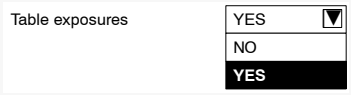
- For more selections *click* the ▼ or ▲ button.
  - Select the required items.



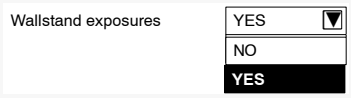
A set of three registration devices on the control desk can be selected.

- To store *click* on *Apply=F2.*

- Click on Room configuration to open the selection menu

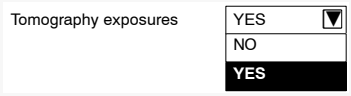


To establish the table bucky
- NO = bucky table is not installed
- YES = bucky table is installed

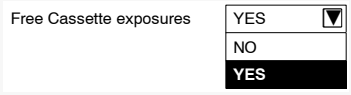


To establish the wallstand bucky
- NO = bucky wallstand is not installed
- YES = bucky wallstand is installed

- Set Tomography exposures to YES
- To store *click* on *Apply=F2.*
- Reset the Bucky controller.
- A message on the control handle will appear.

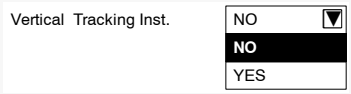


To establish the tomo assembly
- NO = tomo is not installed
- YES = tomo is installed



To select the free exposure function
- NO = function is not available
- YES = function is available

- Set Vertical Tracking Inst. to YES
- To store *click* on *Apply=F2.*
- Reset the Bucky controller.



To select the vertical tracking function
- NO = function is not available
- YES = function is available

- A message on the control handle will appear.

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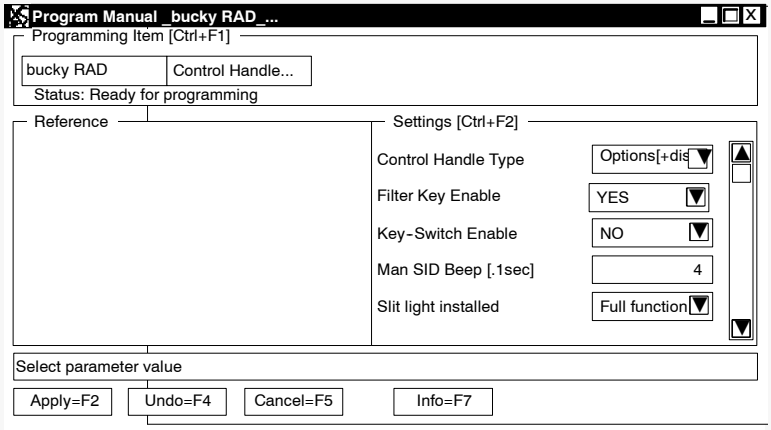
9.1.4. Control handle

This sub-menu contains only the parameters affecting the control handle.

- Select *Control Handle* with *double-click.*

The following window appears.



- For more selection *click on* the ▼ or ▲ button
  - Highlight the installed device

Control Handle Type — Options[+disp] / Standard / Options[+disp]

☐ Standard = without display
Options[+disp] = ☐ Control handle with display

Filter Key Enable — YES / NO / YES

☐ NO
☐ YES = The filter key on the control handle is available

- To overwrite setting data point in the setting field with a cursor *click*

- To store *click* on *Apply=F2*

Key-Switch Enable — NO / NO / YES

☐ NO
☐ YES = key switch is present

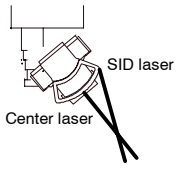
- *Click* on *Control Handle* to open the selection menu.

Man SID Beep [.1sec] — [ ]

Value of beep duration.
Only used for collimator Nicol = 0 ... 255

Slit light installed — Retricted / None / Restricted / Full function

☐ None = Center laser and SID laser are not available
☐ SID laser is available via
RGDV free exposure,
RGDV bucky table
RGDV bucky wallstand



SID laser is available via RGDV free exposure and RGDV bucky table, if the collimator is not in 0 ° or 90 ° position.

Full function = SID laser is available at every time

NOTE

If a control handle is installed without an SID laser the item ***Full function*** *must be selected.*

Slit Light delay [sec] — [ ]

Value of slit light duration = 0 ... 255

Slit Light by Workstation — NO

not available for bucky

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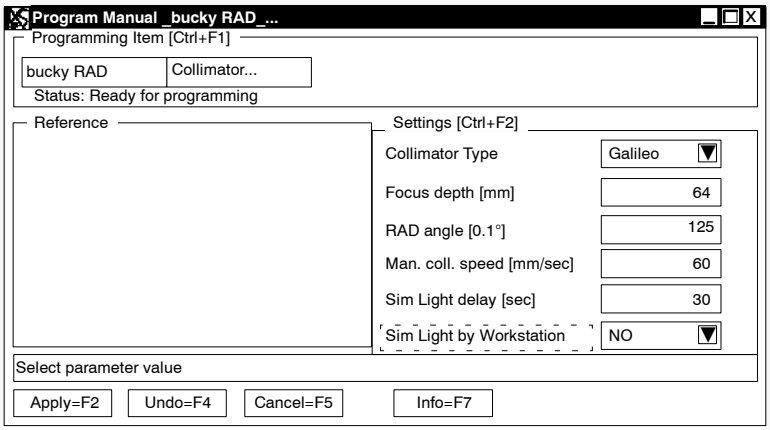
9.1.5. Collimator configuration

This sub-menu contains all parameters affecting the collimator.

- Select *Collimator* with *double-click.*

The following window appears.



- Use the cursor to select the required items.

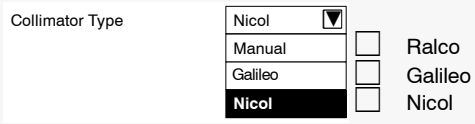
- Enter the new values.

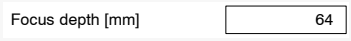
- C*lick* on the ▼ or ▲ button for more selections.

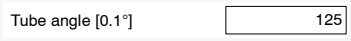
  - Highlight the installed device.

- To store *click* on *Apply=F2.*

To go to the next stage
click on *Collimator...*



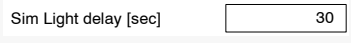




Respect the tube allocation

144 for tubes:	SRO 09 50
	SRO 25 50
	SRO 25 51
125 for tubes:	RO 17 50
	SRO 33 100
	SRO 33 101

Moving speed of the shutters by using the remote control on wallstand side vary the collimation field.



- Set Sim Light delay time.

- To store *click* on *Apply=F2.*

- Reset the bucky controler

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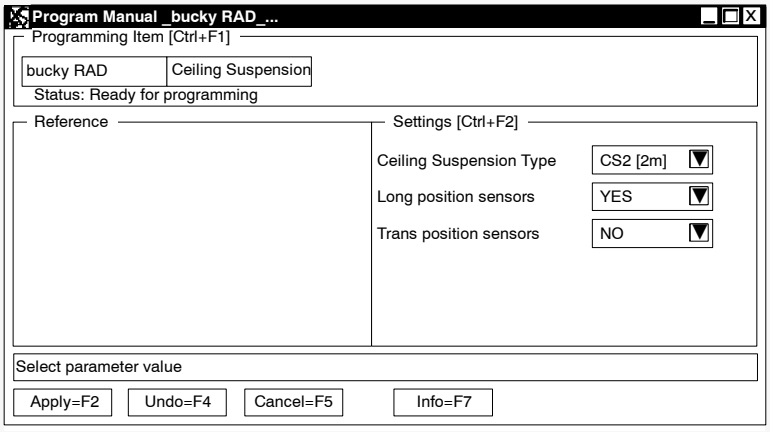
9.1.6. Ceiling suspension

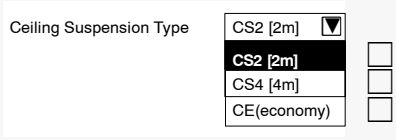
This sub-menu contains all parameters that configure the ceiling suspension.

- Select *Ceiling Suspension* with *double-click*.

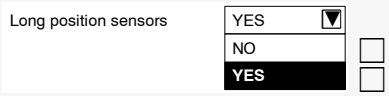
The following window appears.



- Use the cursor to select the required items.



- For more selections *click* the ▼ or ▲ button.
  - Highlight the installed device.



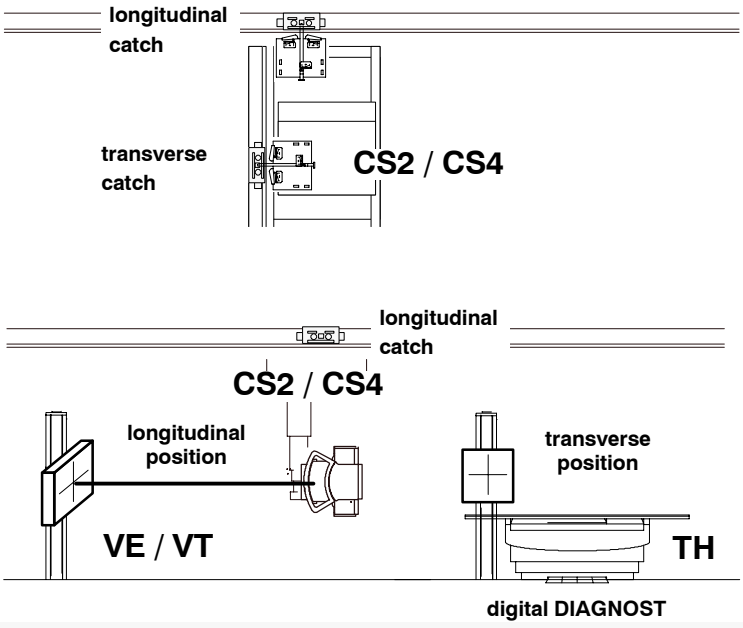
YES = longitudinal catches are recognized, used for a system without a wallstand, or wallstand is longitudinal positioned. Also used for BuckyDiagnost FS

No = BuckyDiagnost FS
YES = transverse catches are recognized,

- To store *click* on *Apply=F2.*
- *Click* on *Ceiling Suspension* to open the selected menu.

NOTE

If long/trans position sensors are changed also 9.1.8 (Wallstand Position) has to be changed in programming.



⚠ WARNING

Make sure that only one catch position sensor (longitudinal or transverse) is programmed to "YES", otherwise system malfunction occurs:
"No tomo ready after leaving the system center position catch!"

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9.1.7. Floor Stand

For the configuration and adjustment of the BuckyDiagnost FS (Floor Stand) refer to chapter 9.1.6 Ceiling suspension.

Different settings for the BuckyDiagnost FS are discribed in the ceiling suspension chapters.

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9.1.8. Table configuration

This sub-menu contains all parameters affecting the table.

- Select *Table* with *double-click.*

The following window appears.

NOTE

Figures show default values.

- Use the cursor to select the required items.

- *Click* on the ▼ or ▲ button for more selections.
  - Highlight the installed devices.

- To store *click* on *Apply=F2*

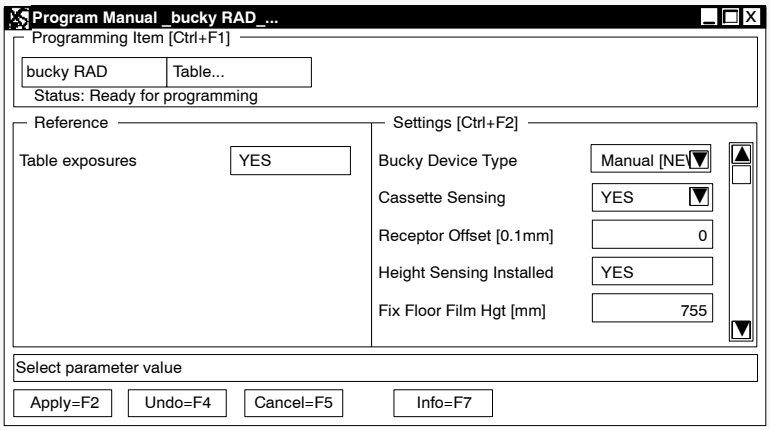
- *Click* on *Table* to open the selection menu.

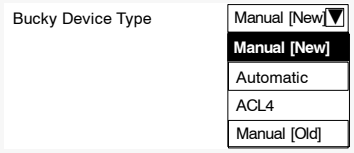
NOTE

TID = 69 mm for INALFA

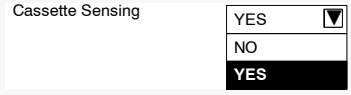
TID = 70 mm for ACL4

The TID can be used if the actual tomo height will not meet the displayed tomo height as shown on control handle. In this case the TID value may be different from the "default" values.

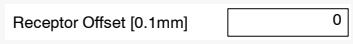




Type of cassette loader currently used.
New = type with encode disks
Automatic **C**assette **L**oader (ACL)
Automatic **C**assette **L**oader 4
Type of encoder disks

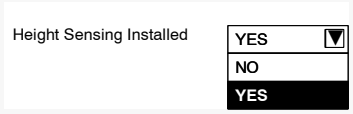


NO = cassette sensing disabled
YES = cassette sensing enabled

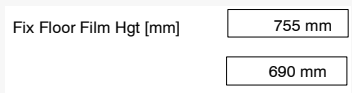


Used to provide the possibility to narrow the collimator leaves by an offset factor so that they can always be seen on the film, default = 0

value in range 0....100



NO = easy DIAGNOST or bucky TH fixed table.
YES = bucky DIAGNOST TH

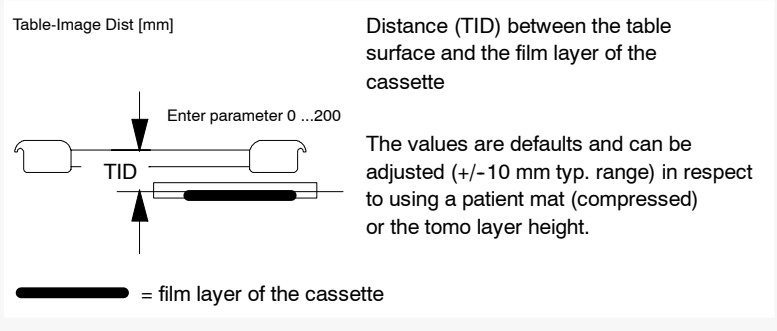


used for easy DIAGNOST

used for bucky TH fixed table

Table height sensing = No

enables this function



Distance (TID) between the table surface and the film layer of the cassette

The values are defaults and can be adjusted (+/-10 mm typ. range) in respect to using a patient mat (compressed) or the tomo layer height.

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9.1.9. Wallstand

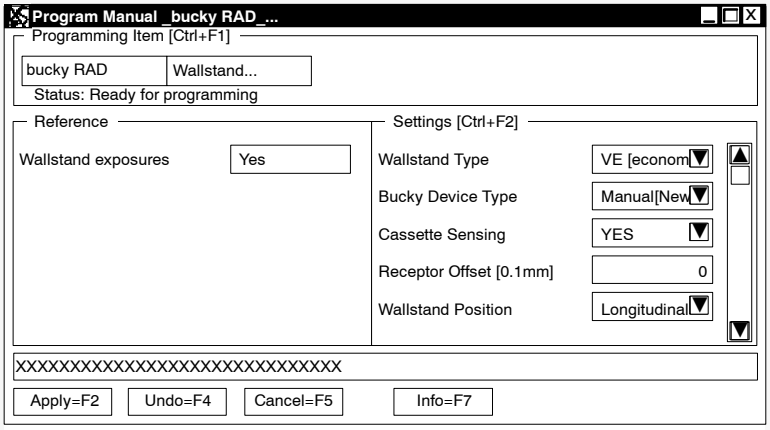
This sub-menu contains all parameters to configure the wallstand.

NOTE

It is enabled only if:
Wallstand exposures = YES in the sub-menu Room Configuration

- Select *Wallstand* with *double-click*

The following window appears.



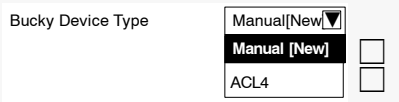
- Use the cursor to select the required items.
- *Click* on the ▼ or ▲ button for more selections.
  - Highlight the installed device.
- To store *click* on *Apply=F2*
- *Click* on *Wallstand* to open the selection menu.

NOTE

If Wallstand Position is changed also 9.1.6 (Ceiling long/trans position sensor) have to be changed in programming.

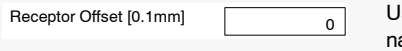
Wallstand type attached to the system
VE = standard
VT = tiltable

bucky DIAGNOST VE/VT , VE2/VT2



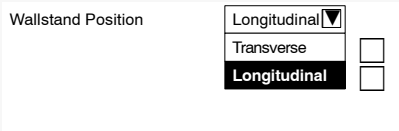
Type of cassette loader currently used
... with encoder disks
Automatic **C**assette **L**oader 4

NO
YES = bucky tray has cassette format sensing, the item Receptor Offset is enabled

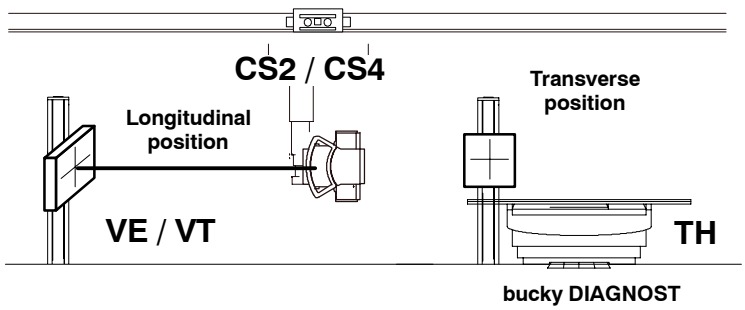


Used to provide the possibility to narrow the collimator leaves by an offset factor so that they can always be seen on the exposure image, default = 0

value in range 0...100



Transverse = bucky tray is placed to the **long** side of the bucky table
Longitudinal = bucky tray is placed to the **small** side of the bucky table



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Height Sensing Installed

YES
NO
YES

☐ NO
☐ YES = continuous height needed for tracking option

Collimator Remote Crtl.

NO
NO
YES

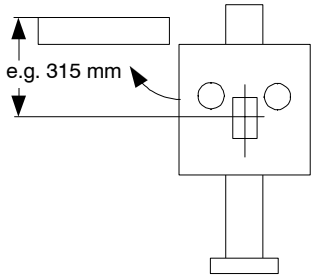
☐ NO
☐ YES = a remote control handle is fitted (needed if tracking option is established in a bucky DIAGNOST system including bucky DIAGNOST VE/VT family)

Wall Tilted Offset [mm] ☐

Set offset for a tilting wallstand, used for tracking function

☐ bucky DIAGNOST VT = 315 mm

☐ bucky DIAGNOST VT2 = 385 mm (ACL4)

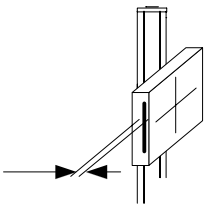


FrontPlate-Im. Dist [mm] ☐

Distance between bucky unit surface and = film plane

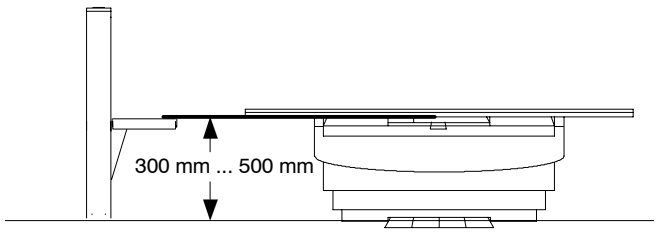
☐ INALFA = 45 mm

☐ ACL4 = 47 mm



WS Default Height [mm] 410

Default Height = 410 mm



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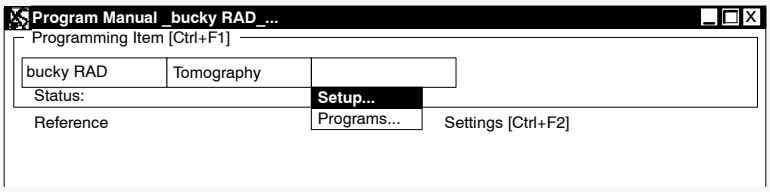
9.1.10. Tomography configuration

In this sub-menu all data are related to the tomography option. This menu consists of two further sub-menus *Setup* and *Programs*.

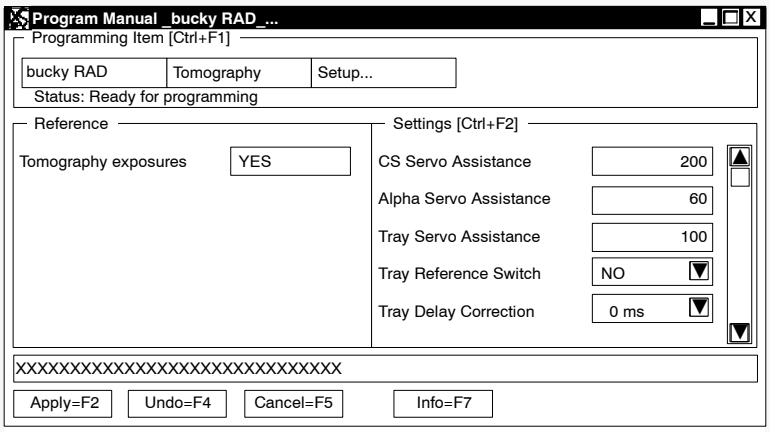
NOTE

It is enabled only if:
Tomography exposures = YES in the sub-menu Room Configuration



- Select *Tomography* with *double-click.*

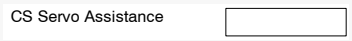
The following window appears.



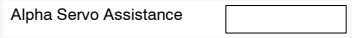
NOTE

Figures show default values.

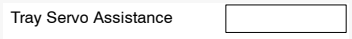
- Select *Setup.*
  - Press *Enter* key.
- Use the cursor to select the required items.
- *Click* on the ▼ or ▲ button for more selections.
  - Highlight the installed device



Value in range 3 ... 250



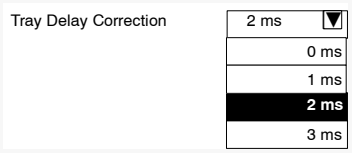
Value in range 3 ... 250



Value in range 3 ... 250

NO = function is disabled (TOMO 2)
YES = Tray Reference Switch is present (TOMO 1)

Note:
Tomo 1 is manufactured 1995-1999
Tomo 2 is manufactured since spring 1999.



Value in range -15 ms ... +15 ms

Determine the value by qualification of the tomo image, use images quality tool.

BuckyDiagnost FS:

Setting	Recommended value
CS Servo Assistance	110
Alpha Servo Assistance	80
Tray Servo Assistance	100
Tray Delay Correction	-1 ms

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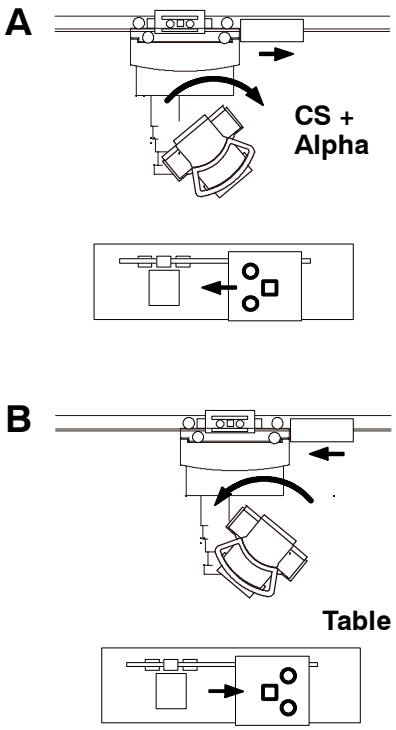
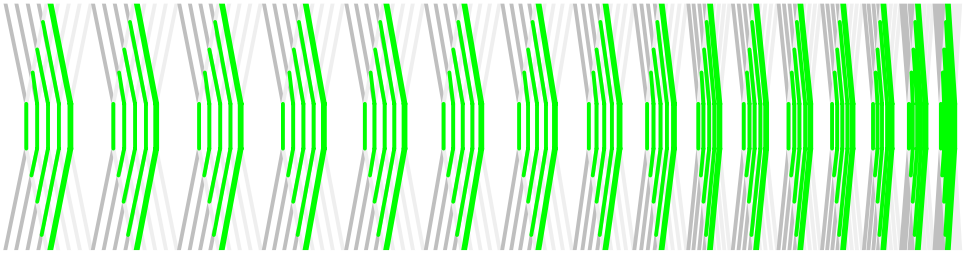
- Check tray delay
  - Layer height: 90 mm (80 ... 100 mm)
    Tomo program: 40° 1.2 s
    - Position the tomo phantom in the bucky center
- Make an exposure, Tomo Run Direction **A**
- Check exposure
  - If figure **1** is shown decrease the value of Tray Delay Correction
  - If figure **2** is shown increase the value of Tray Delay Correction

- Make an exposure, Tomo Run Direction **B**
- Check exposure
  - If figure **2** is shown decrease the value of Tray Delay Correction
  - If figure **1** is shown increase the value of Tray Delay Correction

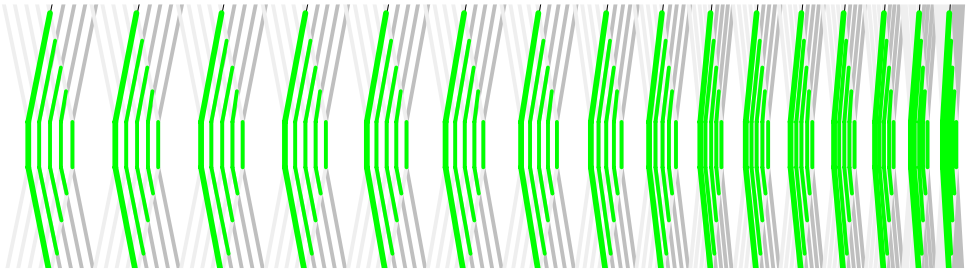


The ideal exposure shows the grid lines blurred symmetrically **3**.

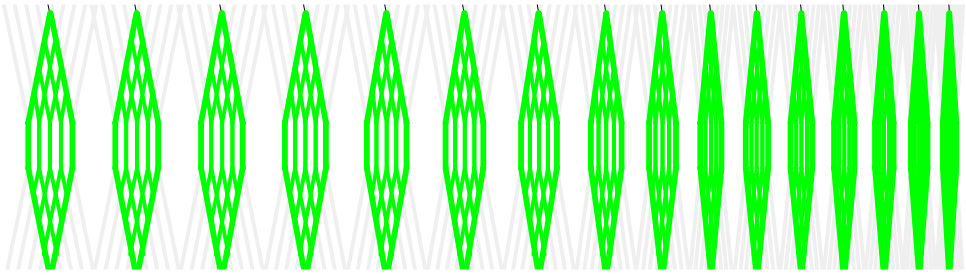
1



2



3



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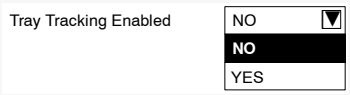
- To store *click Apply=F2*

NOTE

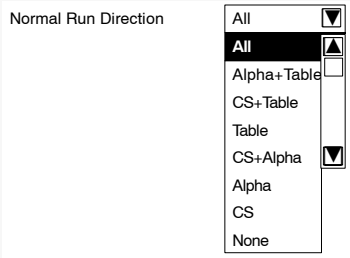
All stored settings are active after a system reset.

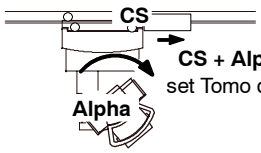
Switch the system OFF and restart.



☐ NO = function is disabled.

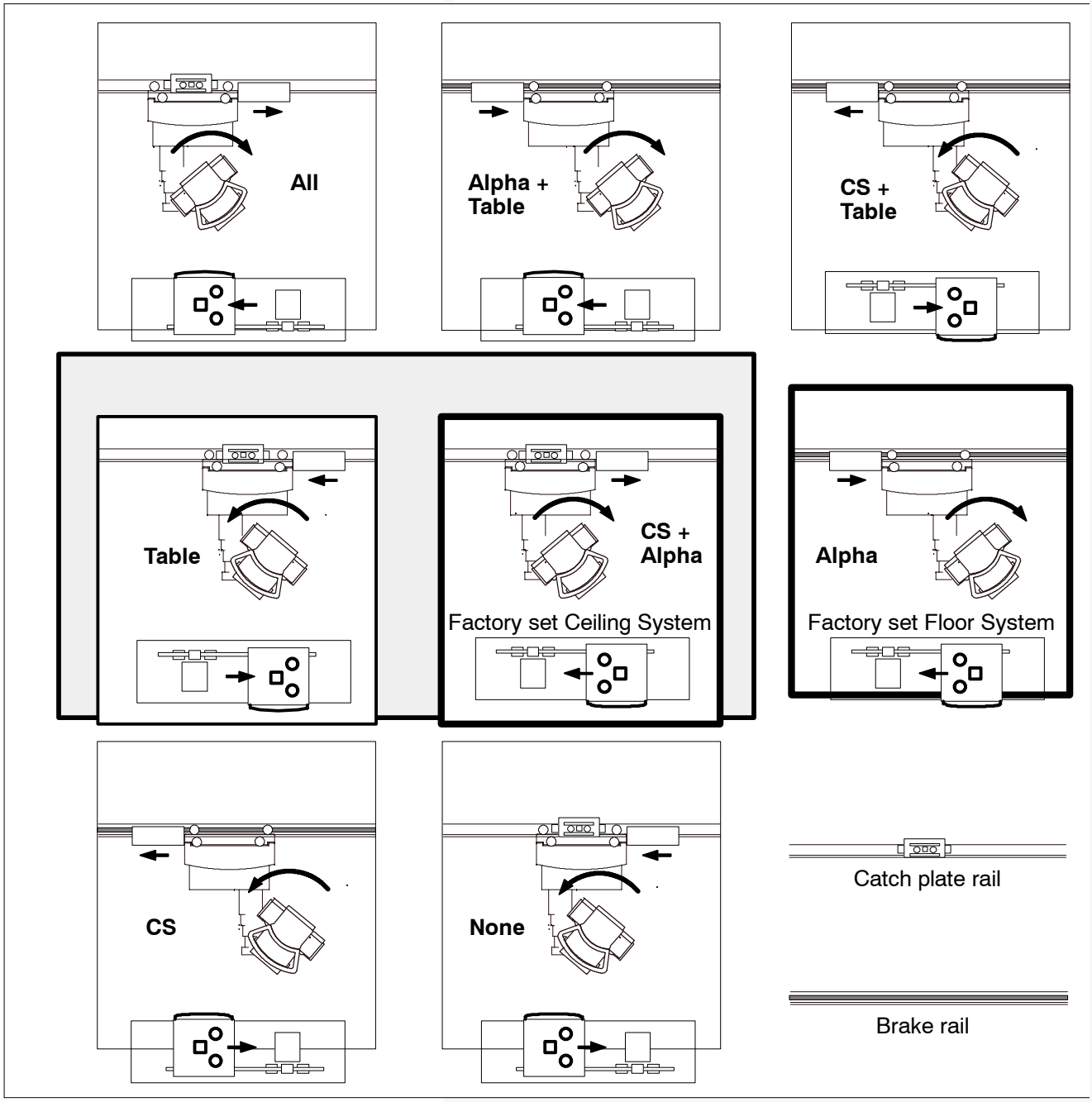
☐ YES = only for automatic collimator auto bucky tray positioning for RGDV Table is enabled. When





☐ **CS + Alpha** = Tomo runs left to right

☐ **Table** = Tomo runs right to left



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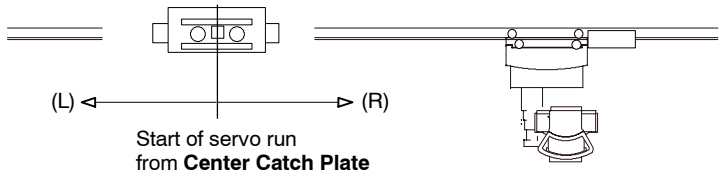
CS Servo (L) EndPos [cm] 120 = value of servo run distance to left

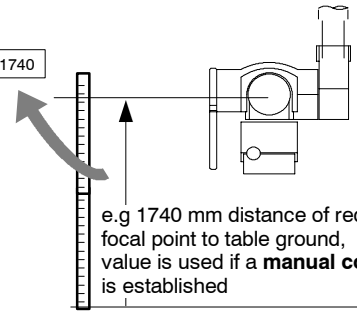
CS Servo (R) EndPos [cm] 120 = value of servo run distance to right



Start of servo run
from **Center Catch Plate**

Enter parameter value in range 0 ... 600

CsHgt Tomo DefPos [mm] 1740



e.g 1740 mm distance of red marked
focal point to table ground,
value is used if a **manual collimator**
is established

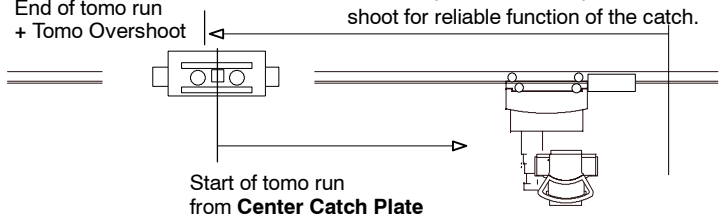
Tomo Overshoot [mm] 8

Default = 8 mm BuckyDiagnost CS

Default = 1 mm BuckyDiagnost FS

After tomo exposure the CS/FS runs back to the catch plate and will stop after Tomo Overshoot for reliable function of the catch.

End of tomo run
+ Tomo Overshoot



Start of tomo run
from **Center Catch Plate**

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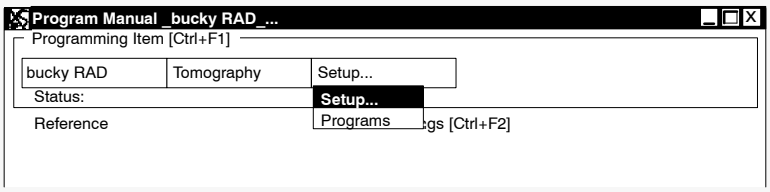
- Select *Programs.*
  - Press *Enter* key.

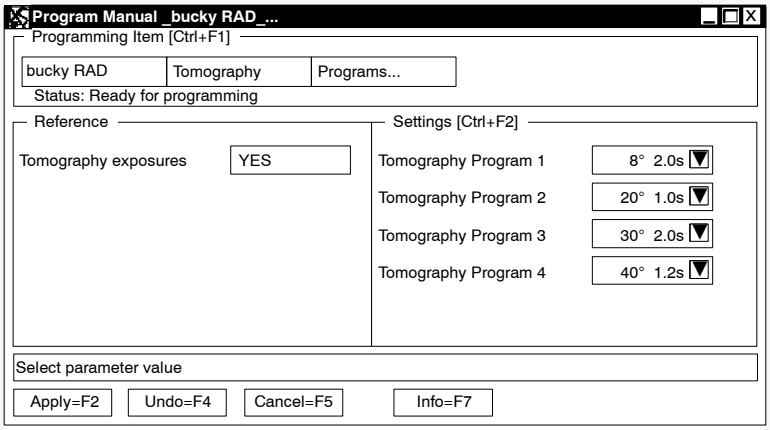


Four standard tomography programs are stored in the Bucky controller.
There are 16 programs available.

NOTE

Figures show default values

- *Click* on the ▼ or ▲ button for more selections.
- Highlight the required parameter.



- To store *click* on *Apply=F2*

- *Click* on *Tomography* to open the selection menu.

NOTE

Make a note of the related tomography program number.
This is later on required for the APR data programming of the generator.

☐	8°/0.8s -> 0
☐	8°/1.0s -> 1
☐	8°/2.0s -> 2
☐	20°/0.8s -> 3
☐	20°/1.0s -> 4
☐	20°/2.0s -> 5
☐	20°/3.0s -> 6
☐	30°/0.8s -> 7
☐	30°/1.0s -> 8
☐	30°/2.0s -> 9
☐	30°/3.0s -> 10
☐	30°/4.0s -> 11
☐	40°/1.2s -> 12
☐	40°/2.0s -> 13
☐	40°/3.0s -> 14
☐	40°/4.0s -> 15

The fixed values of the tomography programs 0 ... 15 are corresponding to the generator settings.

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9.1.11. Tracking

This menu configures all parameters that are involved in the ceiling suspension with tracking.

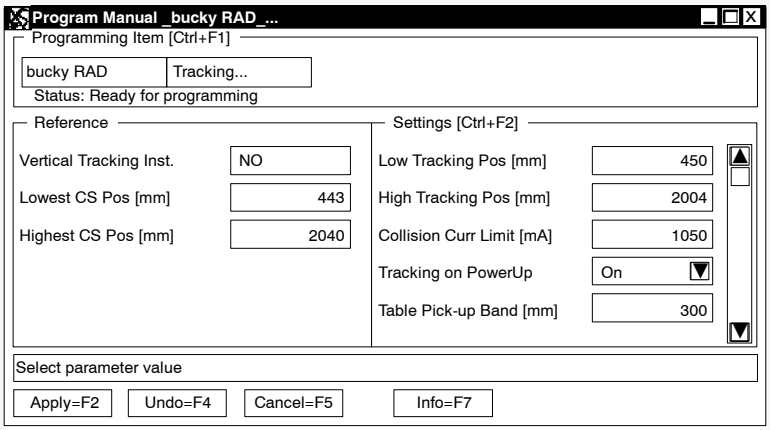
- Select *Tracking.*

NOTE

Settings in the figure are default values.

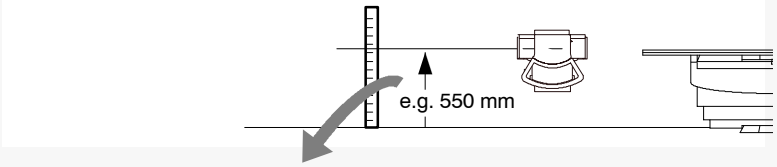
NOTE

Perform the section 10.2 “Adjustment of ceiling suspension height“ first and then proceed with the adjustment of the tracking positions.



- Use the cursor to select or modify the required items.

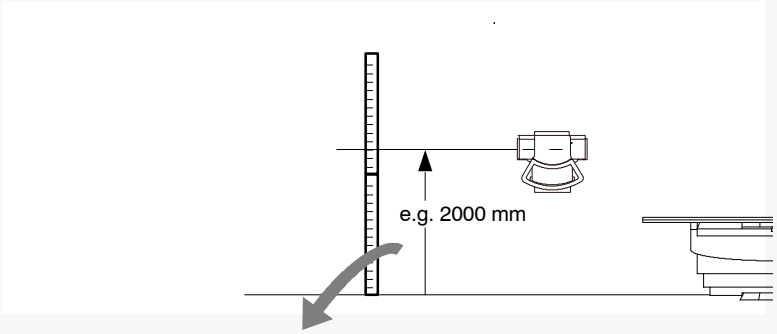
- *Click* the ▼ or ▲ button for more selections.
  - Highlight the parameter



Low Tracking Pos [mm]

This limit is depended upon the locality. Limit of the lowest position of the ceiling suspension, measured from ground to the red marked focal point on tube.

- To store *click* on *Apply=F2*



High Tracking Pos [mm]

This limit is depended upon the locality. Limit of the highest position of the ceiling suspension, measured from ground to the red marked focal point on tube.

- *Click* on *Tracking* to open the selection menu.

Collision Curr Limit [mA]

Limit of the current strength supplied to the tracking motor.

Setting range = 1000 ... 4000 mA.
2800 mA = set by factory for Bucky CS
2000 mA = set by factory for Bucky FS

Tracking on PowerUp

On
Off
On

☐ Enables tracking
☐ Disables tracking

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Table Pick-up Band [mm]

Default = 300 mm.
If the table or the tilted wall stand (90°) is in this band, the ceiling suspension is in the track mode,
10 mm ... 1000 mm .

NOTE

Set the "WS Pick-up Band" in accordance to the room height.

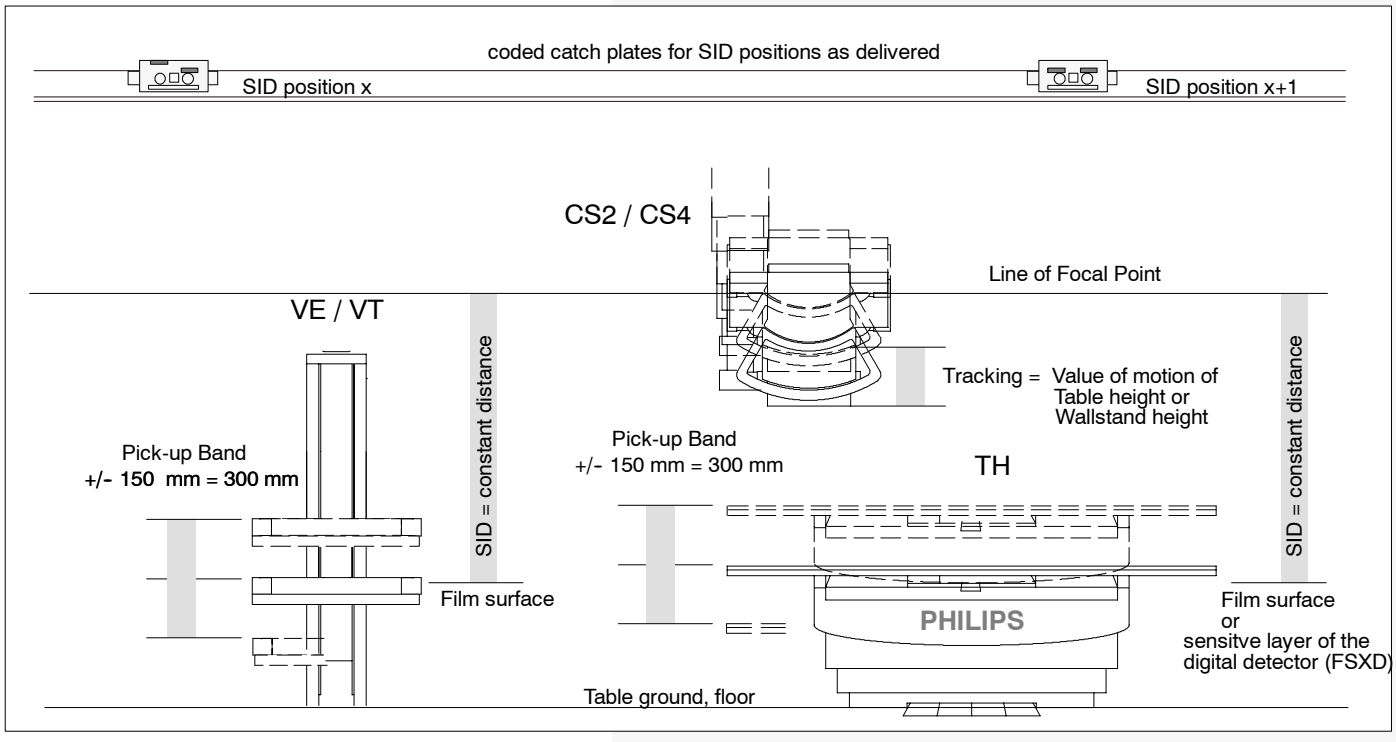
WS Pick-up Band [mm]

The maximum value is twice the minimum distance focus - floor.
E.g. :
min. distance focus - floor = 350 mm
max. value "WS Pick-up Band" = 700 mm
If the tilted wall stand is in this band, the ceiling suspension will track,
10 mm ... 1000 mm.

- After all programmings are finished,switch *OFF* the system and restart the system again 10 s later. This guarantees that all data is handled correctly by the Bucky controller board.

Tracking Def SID [mm]

Default = 1100 mm.
SID = **S**ource **I**mage **D**istance for the table or the tilted wall stand, which is hold by the tracking option,
0 mm ... 3000 mm.


coded catch plates for SID positions as delivered
SID position x
SID position x+1
CS2 / CS4
Line of Focal Point
VE / VT
Tracking = Value of motion of Table height or Wallstand height
Pick-up Band
+/- 150 mm = 300 mm
SID = constant distance
Pick-up Band
+/- 150 mm = 300 mm
TH
SID = constant distance
Film surface
PHILIPS
Film surface or sensitve layer of the digital detector (FSXD)
Table ground, floor

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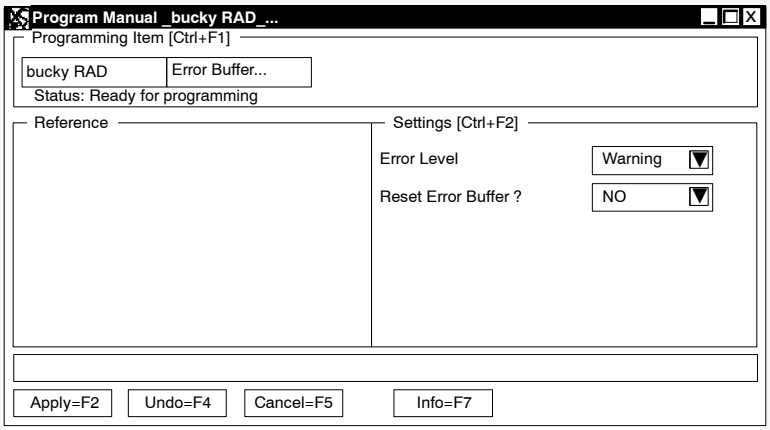
9.1.12. Error buffer

In this menu the behaviour of the error buffer is defined.

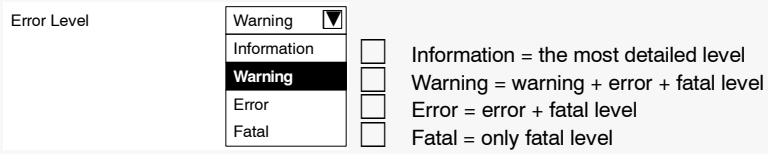
- Select *Error Buffer.*

- *Click* the ▼ button for more selections
  - Highlight the parameter.

- To store *click* on *Apply=F2*

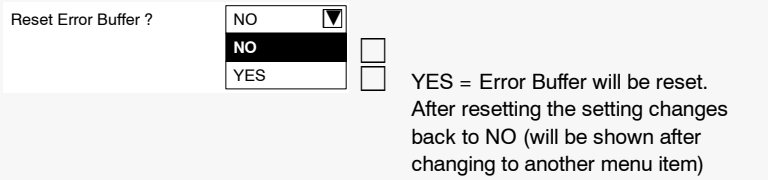


To check the error log refer to 11. “Faultfinding.”
Before exiting X-Scope set *Error Level* to *Warning*.



9.2. End configuration procedure

- Make sure that all settings are stored and *click* on *Apply=F2*


Reset Error Buffer ?
NO
NO
YES
YES = Error Buffer will be reset.
After resetting the setting changes back to NO (will be shown after changing to another menu item)

Important:

- *Click Cancel=F5* to proceed with the adjustment procedure subsequently.

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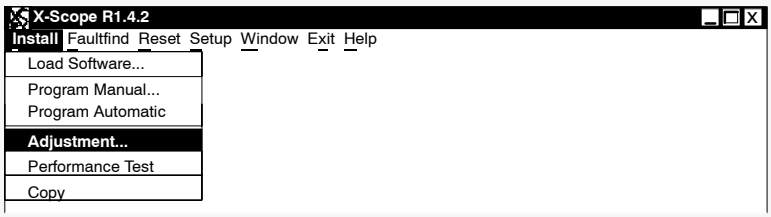
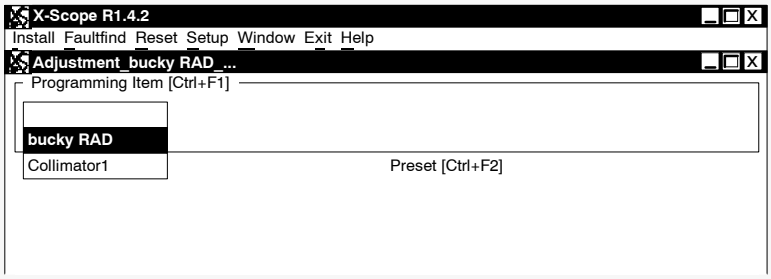
10. Adjustments

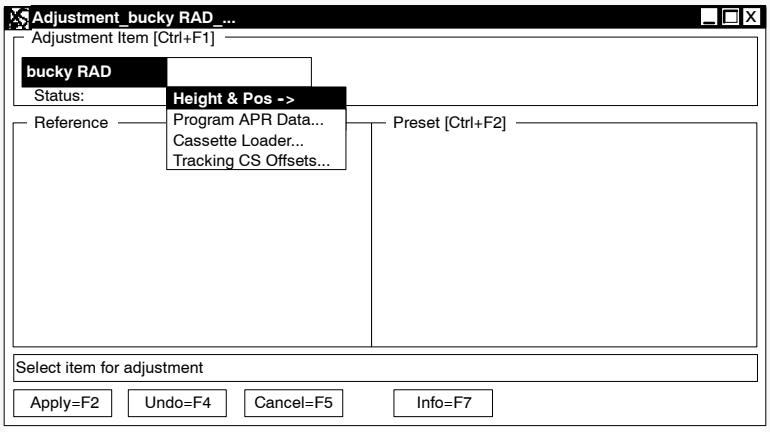
Make sure that the programming procedure is cancelled before the adjustment procedure is started.



- *Click Install*
- Select *Adjustment* with *Enter* key.



- Select *bucky RAD* with *Enter* key.



Wait until the screen on the right appears.

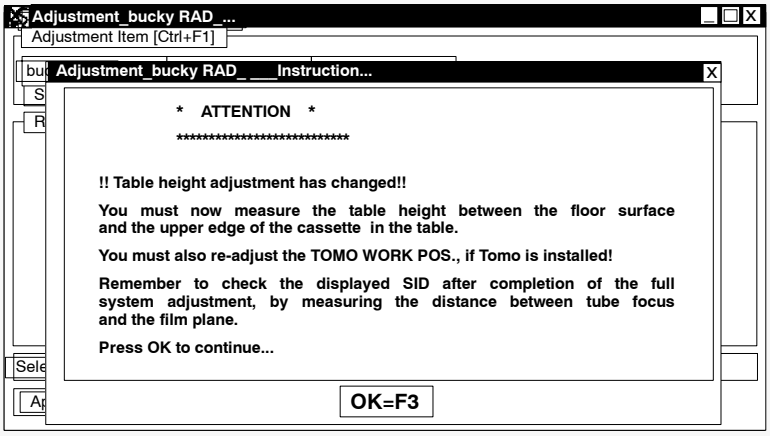
NOTE

Depending on the system configuration not all adjustments are necessary. Not configured items are shown in brackets [...]. See also 9.1 "Manual Programming".

10.1. Adjustment of table height

NOTE

Take attention that the table height adjustment has changed!


Adjustment_bucky RAD_...
Adjustment Item [Ctrl+F1]
Adjustment_bucky RAD_ ___Instruction...
* ATTENTION *
****
!! Table height adjustment has changed!!
You must now measure the table height between the floor surface and the upper edge of the cassette in the table.
You must also re-adjust the TOMO WORK POS., if Tomo is installed!
Remember to check the displayed SID after completion of the full system adjustment, by measuring the distance between tube focus and the film plane.
Press OK to continue...
OK=F3

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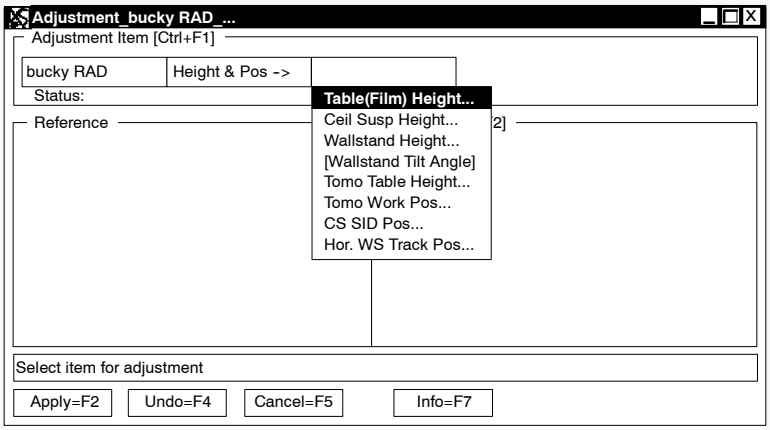
With this adjustment the analogue table height input is calibrated and checked for valid ranges. Furthermore the values for maximum and minimum height are set and the table height linearity factor is calculated.



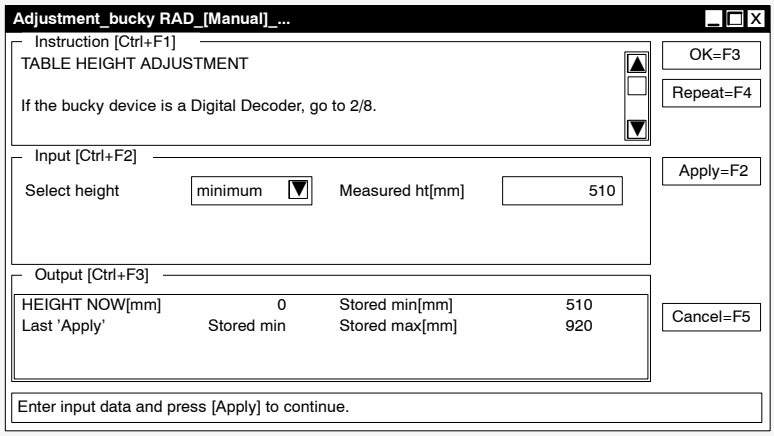
- Select *Table Height.*
- Start with *Enter* key

- Follow the instructions

- Use the scroll-bar to read the instructions.

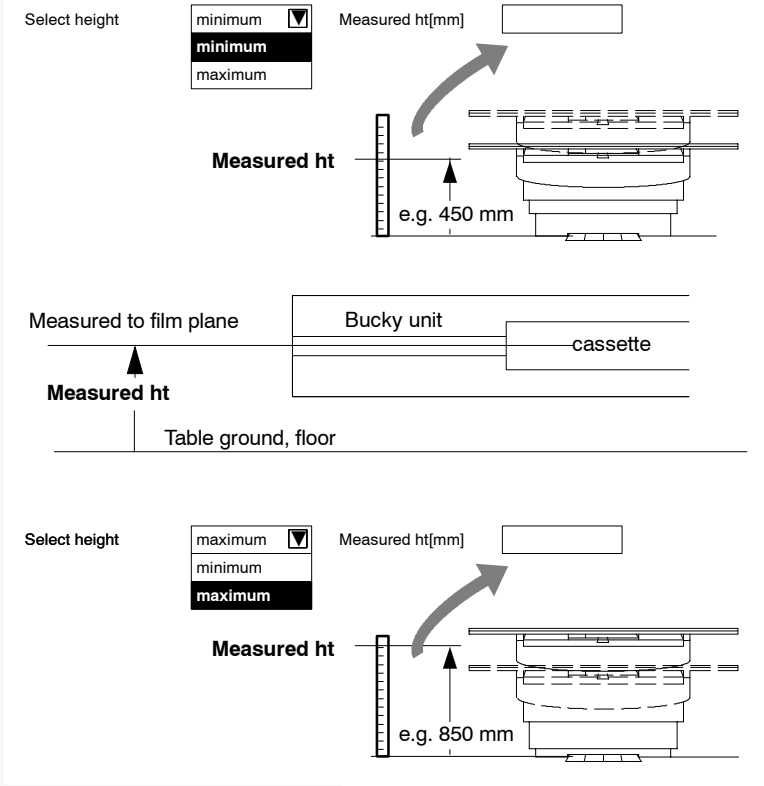
NOTE

The values shown are examples only.



- Use the cursor to select the input field Measured ht.
- To store *click Apply=F2*
  or
  repeat the procedure with *Repeat=F4.*

- Follow the instructions.



- Enter with *OK=F3* for the next step.

- Enter the measured value.

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10.2. Adjustment of ceiling suspension height

This adjustment calibrates the analogue height input for the ceiling suspension and calculates the height linearity factor.

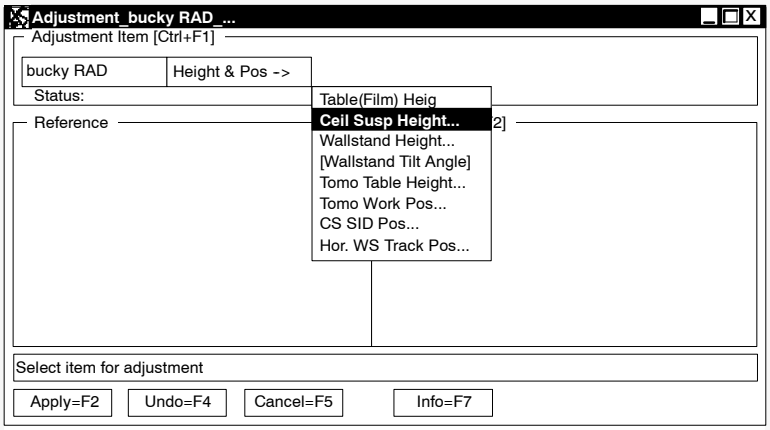
NOTE

It is enabled only if:

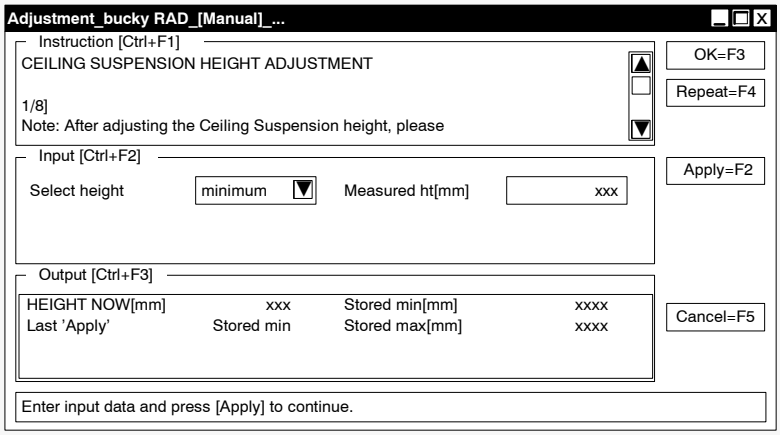
Collimation type = Automatic.

Refer to sub-menu

Program Manual - Ceiling Suspension



- Select *Ceil Susp Height*
- Start with *Enter* key



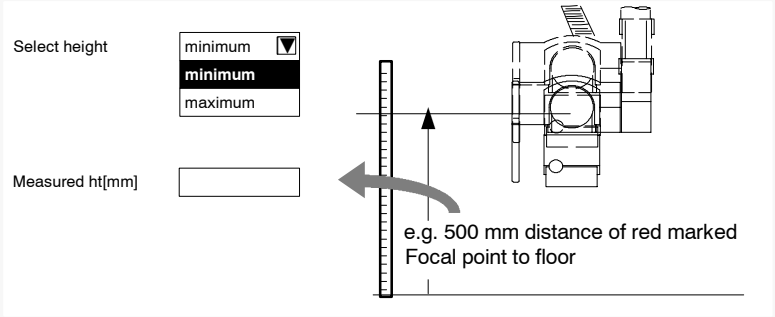
- Follow the instructions in the screen.
- Use the scoll-bar to read the instructions.

NOTE

The values are examples only. They are different for each system.

- Use the cursor to select the input field *Measured Ht* .
  - Enter the measured value.

- To store *click* on *Apply=F2*
  or
  the procedure can be repeated with *Repeat=F4.*

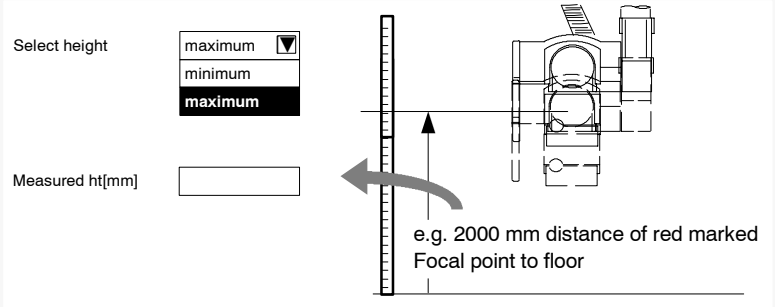


Follow the instruction items in the screen up to item 8.

- Confirm with *OK=F3.*

NOTE

After the adjustments of the CS height are finished readjust the settings of Low Tracking Pos and *High Tracking Pos*, refer to 9.1.10 “Tracking”.



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10.3. Adjustment of wallstand height

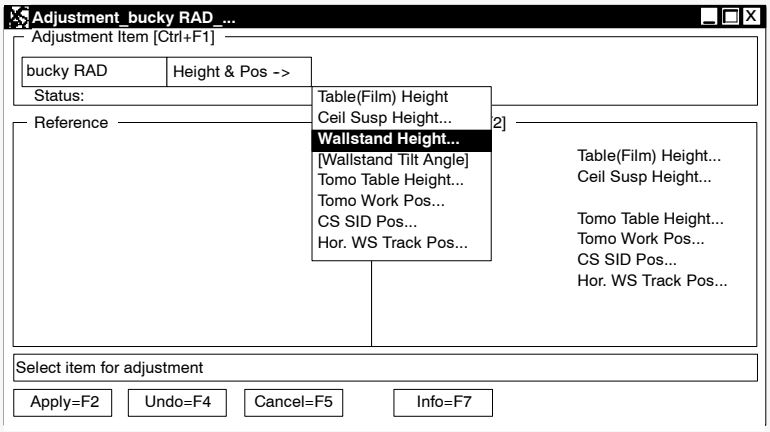
This adjustment stores the minimum and maximum wallstand height in the Bucky controller for calculating correct tracking operations.

NOTE

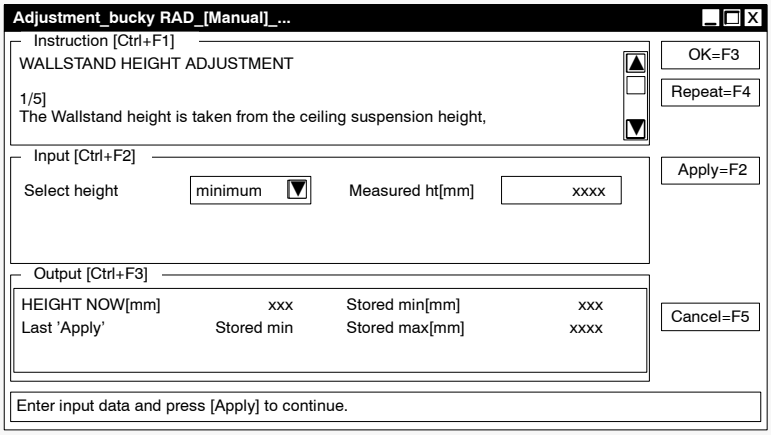
It is enabled only if:

Wallstand exposures = YES

Refer to sub-menu Room Configuration

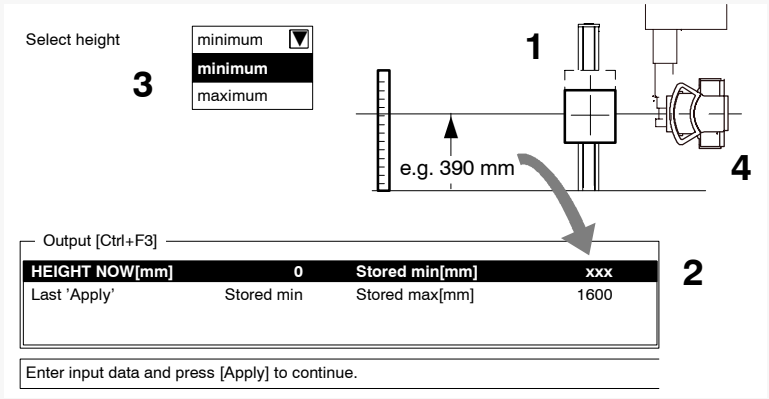


- Select *Wallstand Height.*
- Start with *Enter* key.

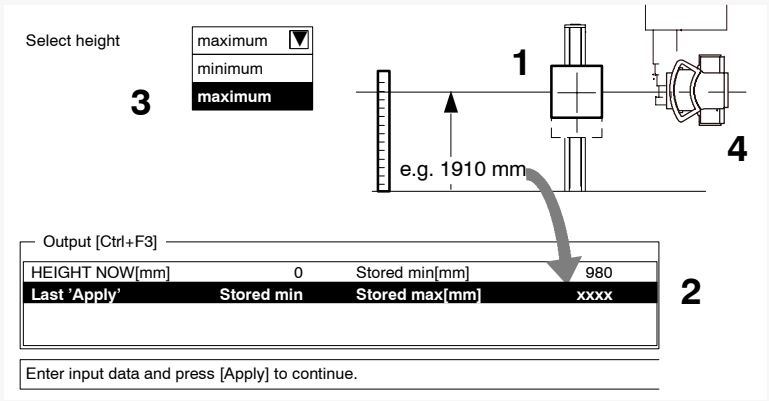


- Follow the instructions in the screen.
- Use the scoll-bar to read the instructions.

- To store *click* on *Apply=F2*
  or
  the procedure can be repeated with *Repeat=F4.*



- Follow the instructions.
  - Respect instruction order **1** ... **4.**



- Confirm with *OK=F3* for the next step.

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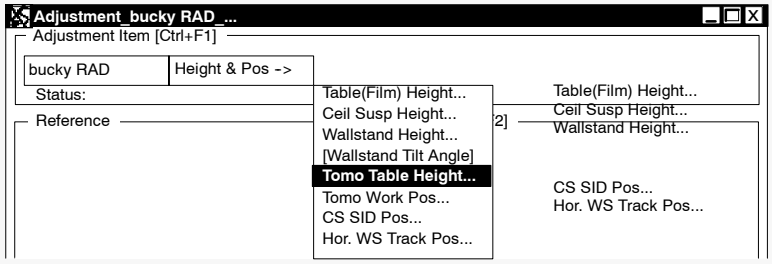
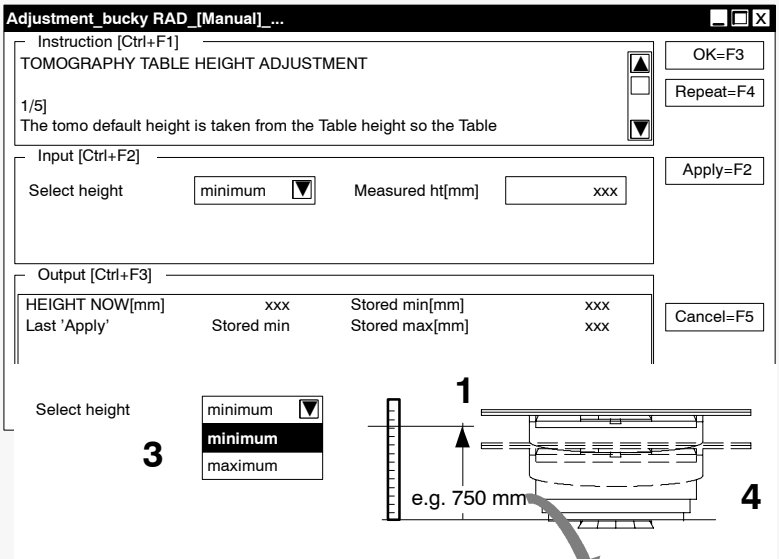
10.4. Adjustment of tomography table height

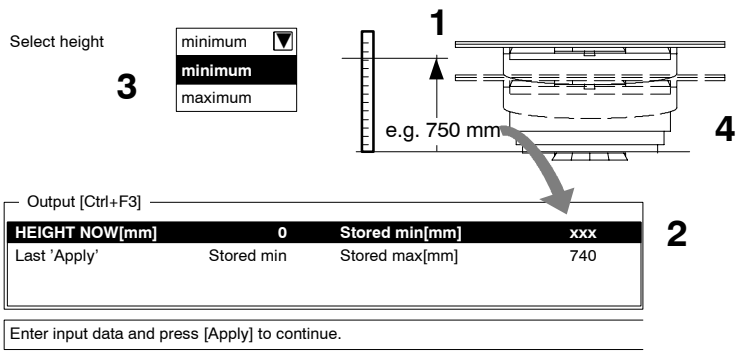
This adjustment calibrates the default working height of the Bucky table. It takes into account the hysteresis of the 750 mm-switch.



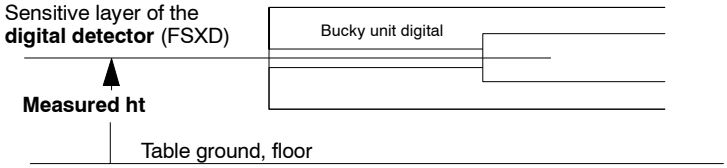
- Select *Tomo Table Height.*
- Start with *Enter* key.

- Follow the instructions **1 ... 5** in the screen.
- Use the scoll-bar to read the instructions.



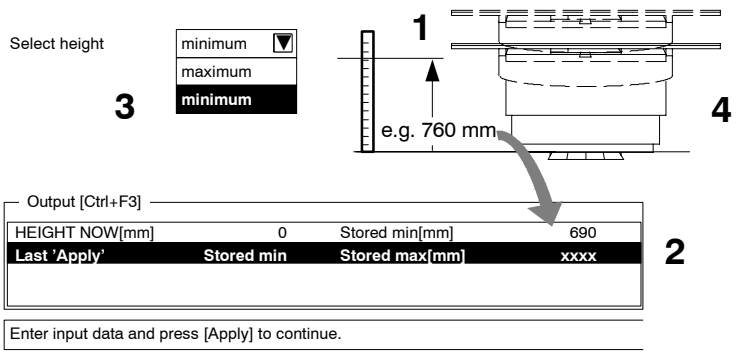


- Follow the instructions.
  - Respect instruction order **1** ... **4.**



- To store *click* on *Apply=F2*
  or
  the procedure can be repeated with *Repeat=F4*

- Confirm with *OK=F3* for the next step.



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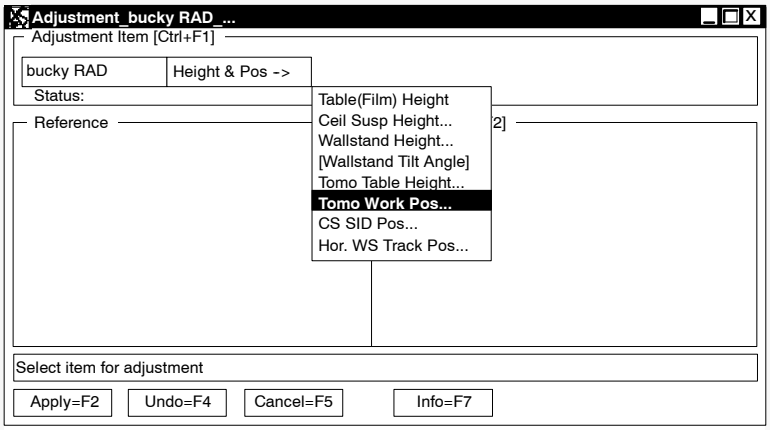
10.5. Adjustment of tomo working position

This adjustment stores the default **tomography working position** in the bucky controller.

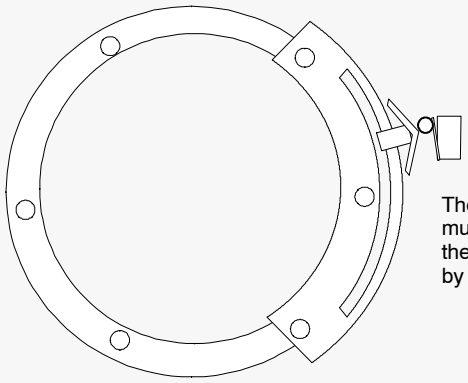


- Move bucky table from bottom to the middle position by pressing the footswitch

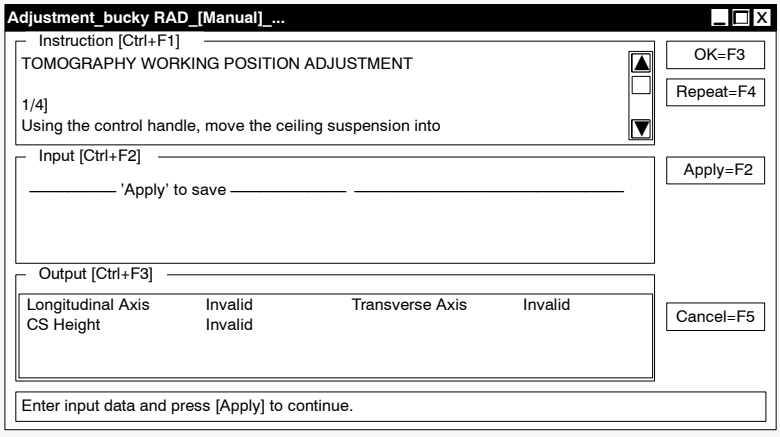
Table stops in the middle position automatically.

- Move manually the ceiling suspension from lowest to the tomography working position (usually 110 cm).
  - Make sure that the control panel display shows the correct SID (usually 110 cm).

The switch of tomo Z-position must be closed. If it is not closed, adjust the notch to the correct position.



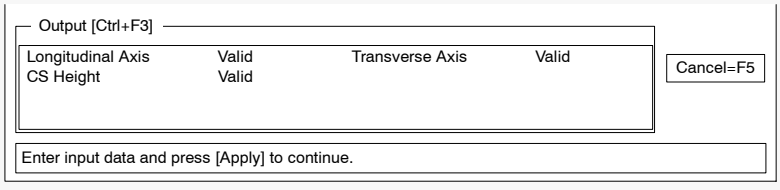
- Check the position of the switch of the Z-axis. The switch must be closed.



- Follow the instructions.
- Use the scroll-bar to read the instructions.
- Move ceiling suspension into
  - longitudinal notch
  - transverse notch
  - height position.

If the screen shows *Valid* for all axes

- *Click* on *Apply=F2*
- *Click* on *OK=F3.*


Output [Ctrl+F3]
Longitudinal Axis Valid Transverse Axis Valid
CS Height Valid
Cancel=F5
Enter input data and press [Apply] to continue.

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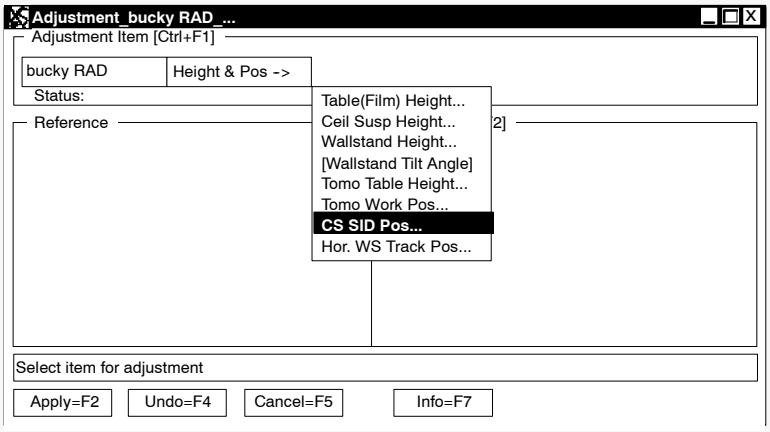
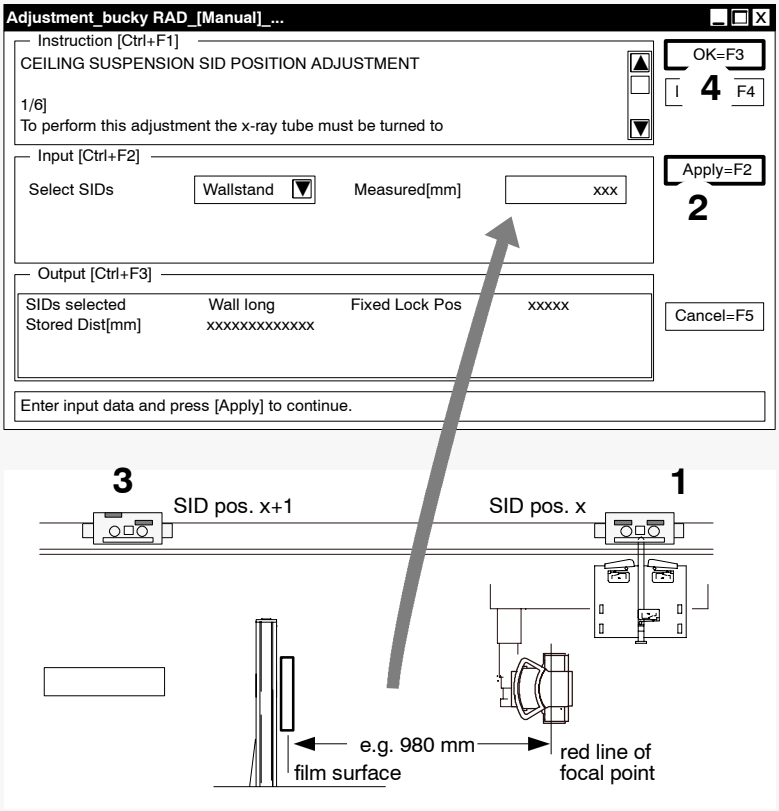
10.6. Adjustment of CS/FS SID positions

This adjustment calibrates the positions of the fixed SID sensors.

- Select *CS SID Pos.*
- Start with *Enter* key.



- Follow the instructions.
- Use the scroll-bar to read the instructions.
- **1** Position the ceiling suspension into the required SID position.
- To change the current distance select the input field *Measured [mm]* with the cursor and enter the measured value.
- **2** *Click* on *Apply=F2* to save the measured value.
- **3** Repeat procedure for all other SID positions.
- **4** Confirm with *OK=F3* for the next step.



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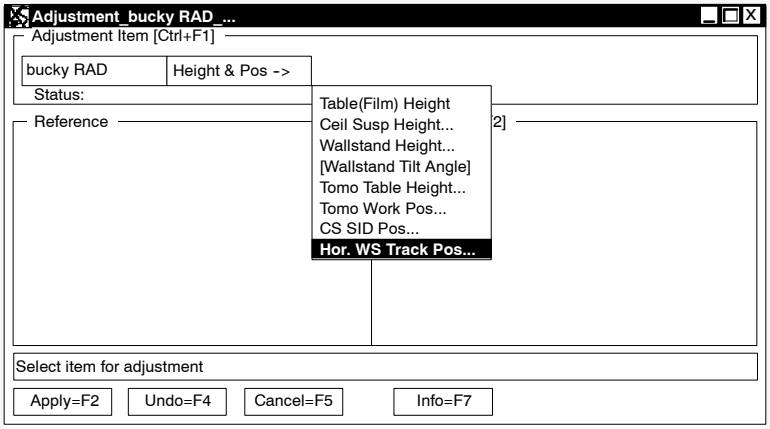
10.7. Adjustment of tracking of a tiltable wallstand

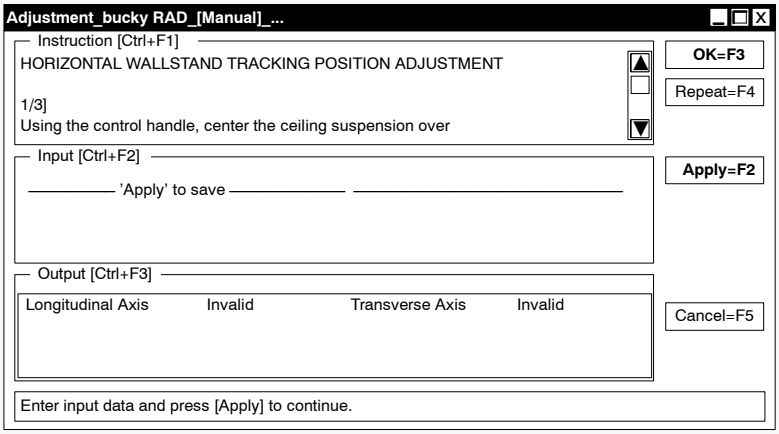
This adjustment calibrates the working position of a tilted (=horizontal) wallstand.

This menu item is available if:

Height Sensing Installed = YES
Refer to *Wallstand*
and
Vertical Tracking Inst. = YES is configured, refer to *Room Configuration.*



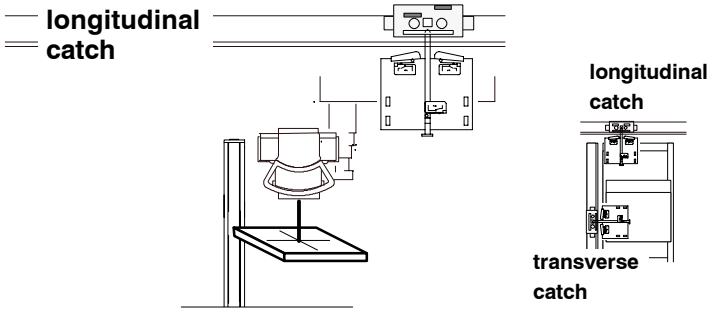
- Select *Hor. WS Track Pos.*
- Start with *Enter* key.



- Follow the instructions on the screen **1 ... 3.**

WARNING

Make sure that the CS is locked in the longitudinal and the transverse catch plate.



- *Click* on *Apply=F2* to save the calculated offset.
- Confirm with *OK=F3* for the next step.

The procedure can be repeated with *Repeat =F4.*

The procedure can be cancelled with *Cancel=F5.*

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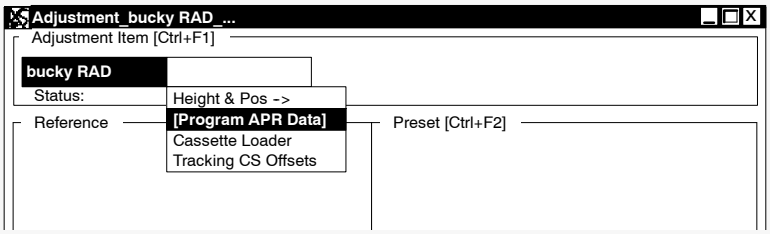
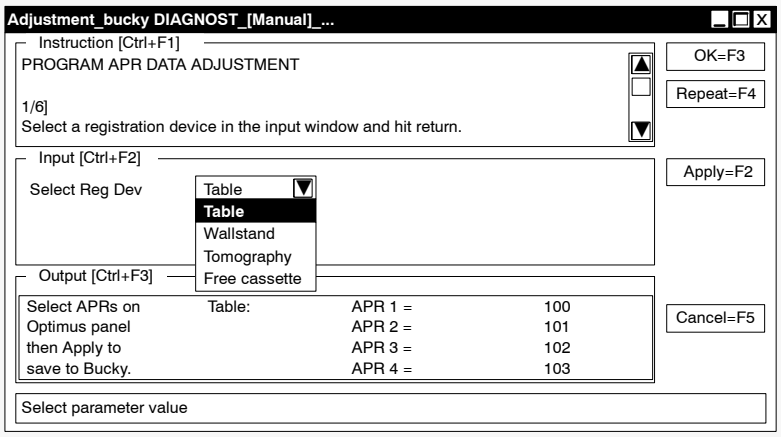
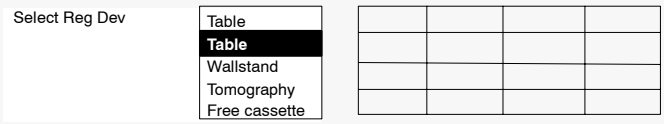
10.8. Adjustment of program APR data

The select generator APRs will be stored in the bucky RAM.



- Select *Program APR Data.*
- Start with *Enter* key.
- Follow the instructions **1 ... 6** on the screen.
- Select a device.
- To store *click Apply=F2.*
- Confirm with *OK=F3* for the next step.



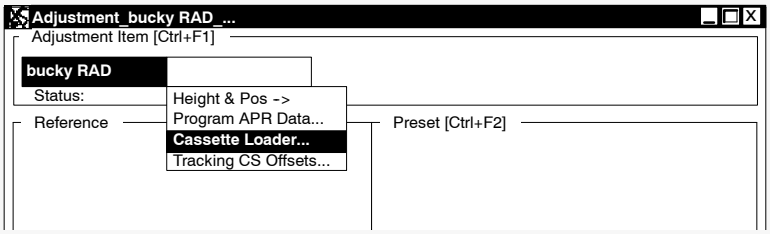


10.9. Adjustment of cassette loader

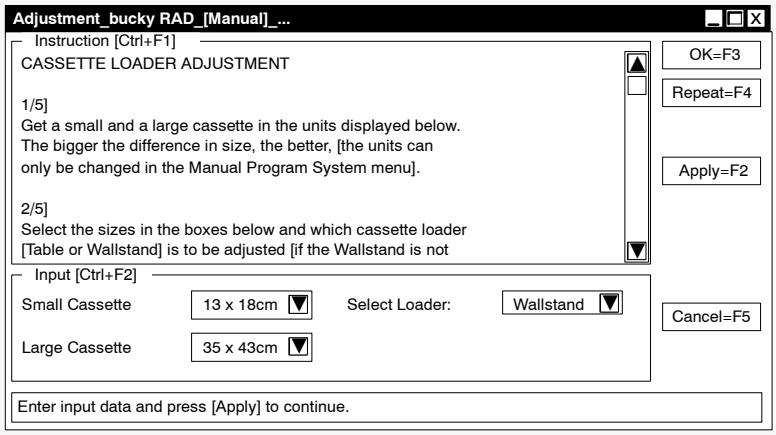
This adjustment calibrates the cassette tray of bucky DIAGNOST VE/VT, VE2/ VT2 and TH/TH2 with cassette format sensing.

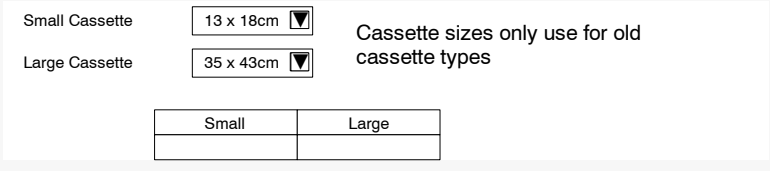
This menu item is available if:

Cassette Sensing = YES is configured, refer to *Wallstand.*



- Select *Cassette Loader.*
- Start with *Enter* key.
- Follow the instructions **1 ... 5** on the screen.
- Use the scroll-bar to read the instructions.
- Select *Table* or W*allstand*.


Adjustment_bucky RAD_[Manual]_...
Instruction [Ctrl+F1]
CASSETTE LOADER ADJUSTMENT
1/5]
Get a small and a large cassette in the units displayed below.
The bigger the difference in size, the better, [the units can only be changed in the Manual Program System menu].
2/5]
Select the sizes in the boxes below and which cassette loader [Table or Wallstand] is to be adjusted [if the Wallstand is not
OK=F3
Repeat=F4
Apply=F2
Input [Ctrl+F2]
Small Cassette
13 x 18cm
Select Loader:
Wallstand
Large Cassette
35 x 43cm
Cancel=F5
Enter input data and press [Apply] to continue.



- Use the cursor to select the right cassette size.

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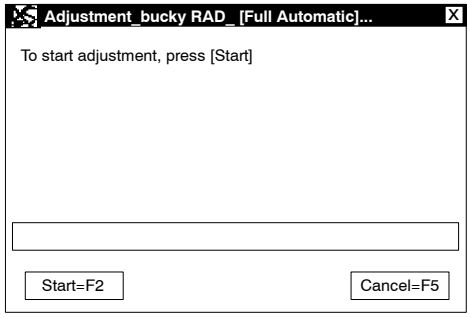
- To store *click* on *Apply=F2*
  or
  the procedure can be repeated with *Repeat=F4.*

- Follow the instructions on the screen.

- Confirm with *OK=F3* for the next step.

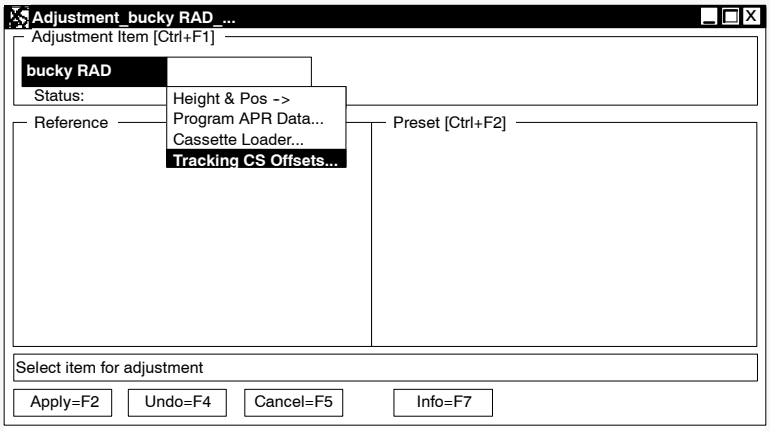


10.10. Adjustment of tracking CS offset

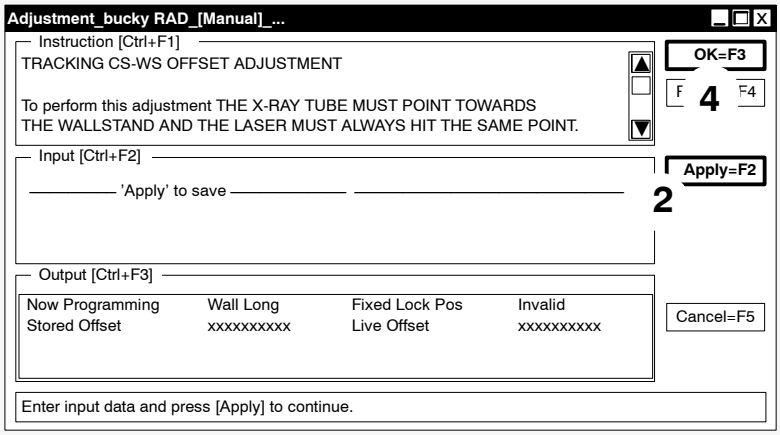
This adjustment eliminates the deviation at several SID positions.

- Select *Tracking CS Offsets.*

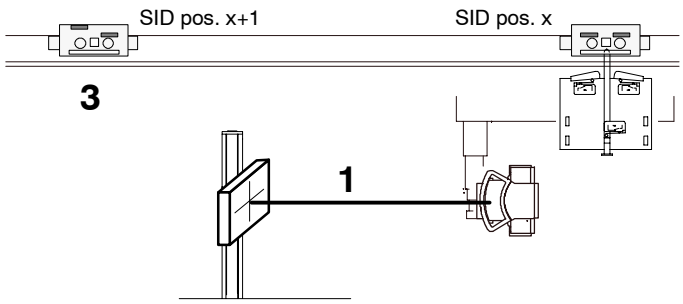
- Start with *Enter* key.



- Follow the instructions on the screen.



- Move the ceiling suspension into the required SID position.
- **1** Center the laser line on the wallstand.
- **2** *Click* on *Apply=F2* to save the calculated offset.
- **3** Repeat the procedure for all other SID positions.
- **4** Confirm with *OK=F3* for the next step.



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11. Faultfinding

- Select *Faultfind*

For more informations about error codes refer to manual SMCM, section “Faultfinding with X-Scope”.

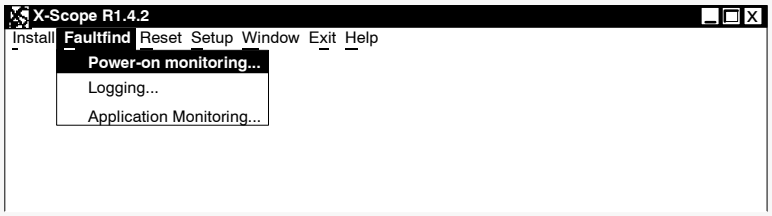
The sub-menus

- *Application Monitoring...*

is not yet implemented.

11.1. Power-on monitoring

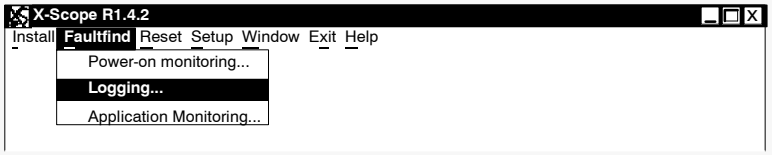
- Select *Power-On monitoring.*
- Start the *Enter* key.



The power-on monitoring (=> VT100) is started.
For more informations refer to manual SMCM, section “Faultfinding with Program VT100”.

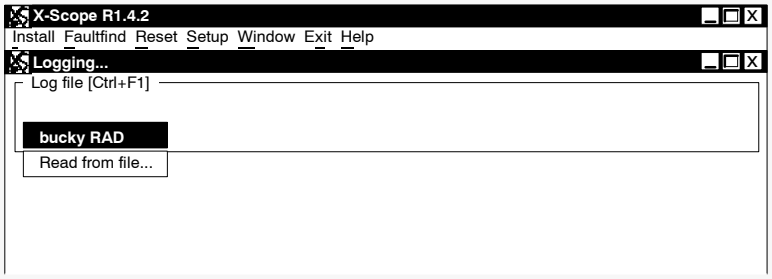
11.2. Logging

- Select *Logging.*



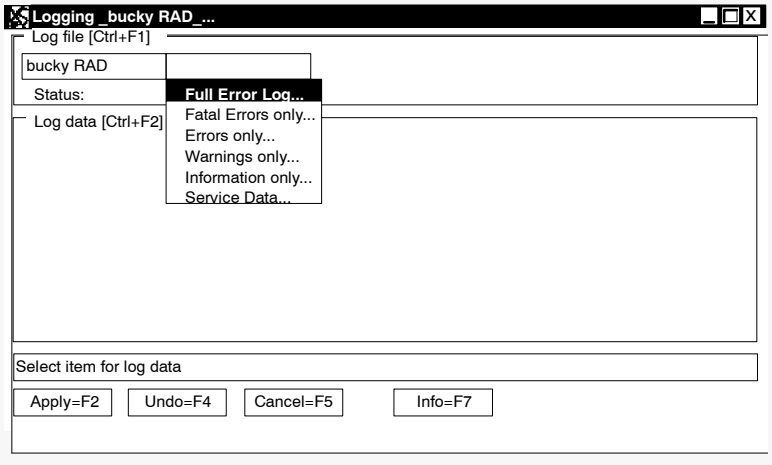
- Start with *Enter* key.

- Select *bucky RAD*.



- Start with *Enter* key.
- Select the required log file.

- Start with *Enter* key.



The cursor in the log data field blinks until the data list appears.

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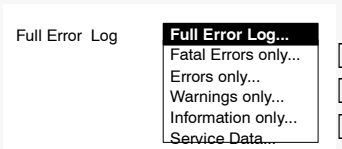
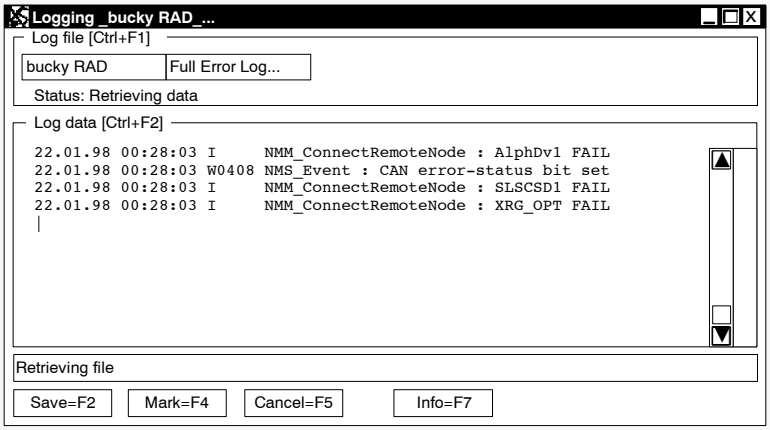


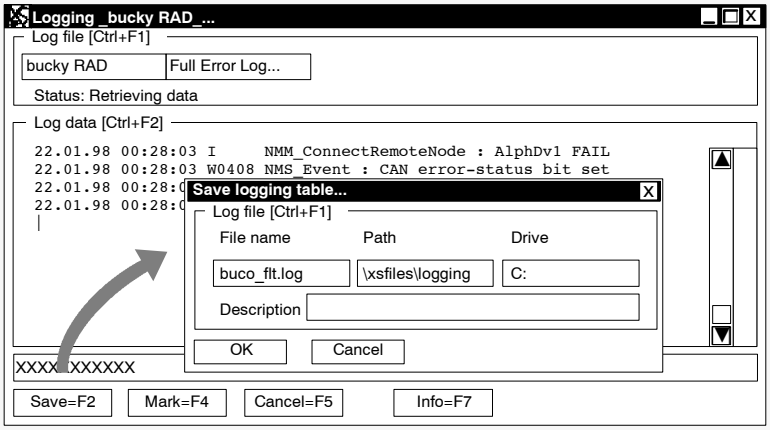
- ☐ Fatal Errors only = only fatal level
- ☐ Errors only = error + fatal level
- ☐ Warnings only = warning + error + fatal level
- ☐ Information = the most detailed level
- ☐ Service Data = equivalent with List Services in VT100

11.2.1. Saving data

Data can be saved to disk with *Save=F2.*



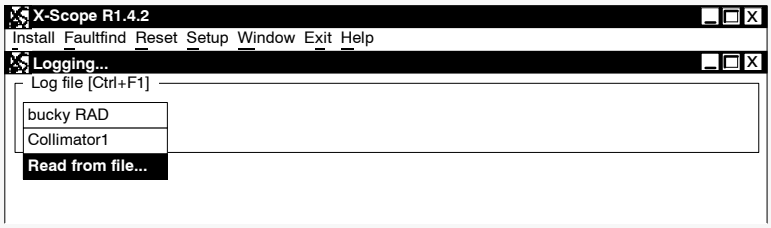
Enter file name, path, drive and description in the pop-up screen. Modify the file extension to .txt to read it with a table calculation program or editor.



11.2.2. Reading data

Stored data can be re-read from disk or floppy.

- Select *Read from file.*

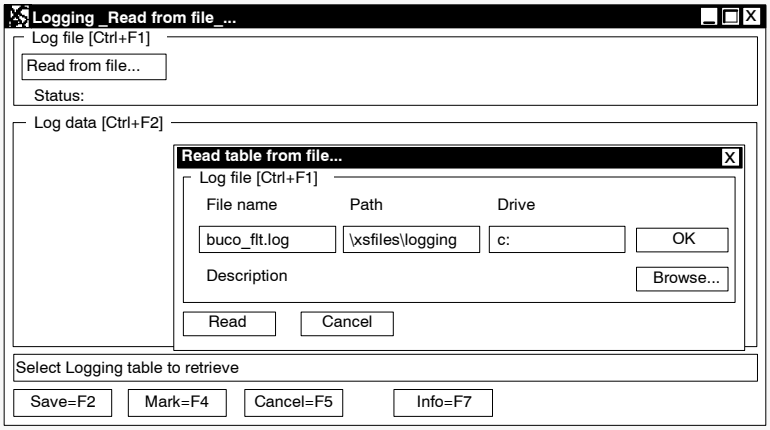


- Start with *Enter* key.

The following window appears.

- Write in the file name, path and target drive.
  If the target is unknown, *click* on *Browse* and select the target.

- Confirm with *OK.*



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12. Finishing X-Scope

- Switch *OFF* the system and switch *ON* again after 10 s. This activates all modifications and adjustments.

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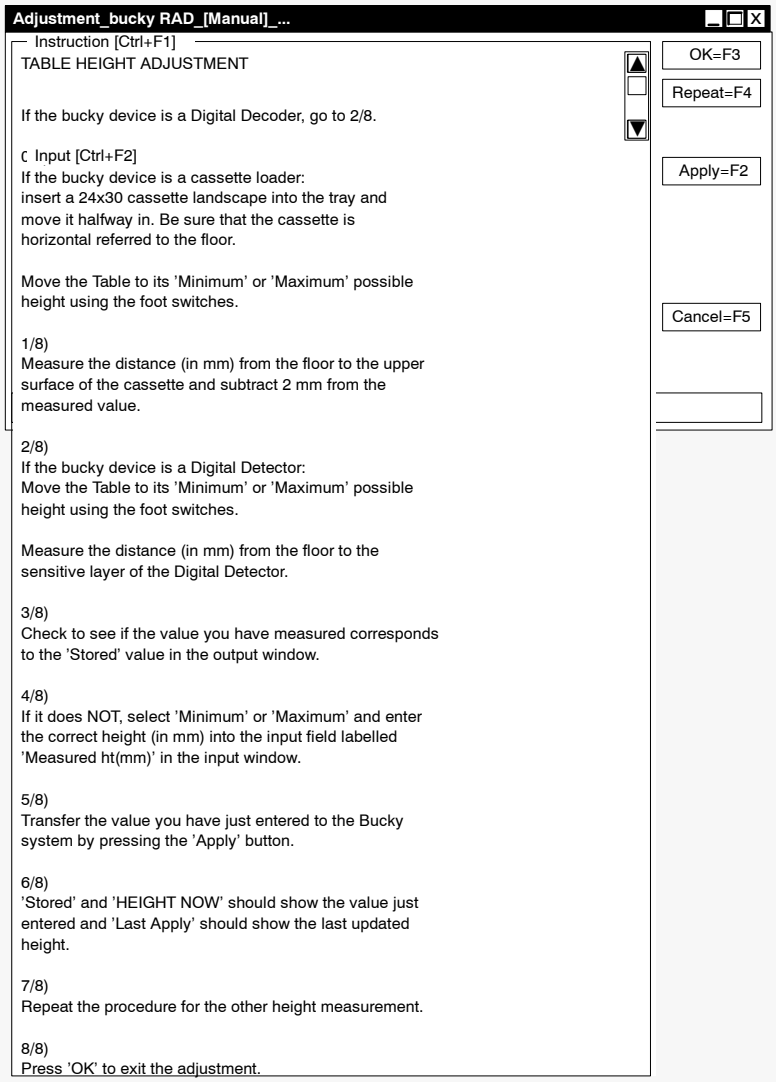
13. Detailed instruction text (screens)

13.1. Adjustment of table height


Adjustment_bucky RAD_[Manual]_...
Instruction [Ctrl+F1]
TABLE HEIGHT ADJUSTMENT
If the bucky device is a Digital Decoder, go to 2/8.
Input [Ctrl+F2]
If the bucky device is a cassette loader:
insert a 24x30 cassette landscape into the tray and move it halfway in. Be sure that the cassette is horizontal referred to the floor.
Move the Table to its 'Minimum' or 'Maximum' possible height using the foot switches.
1/8)
Measure the distance (in mm) from the floor to the upper surface of the cassette and subtract 2 mm from the measured value.
2/8)
If the bucky device is a Digital Detector:
Move the Table to its 'Minimum' or 'Maximum' possible height using the foot switches.
Measure the distance (in mm) from the floor to the sensitive layer of the Digital Detector.
3/8)
Check to see if the value you have measured corresponds to the 'Stored' value in the output window.
4/8)
If it does NOT, select 'Minimum' or 'Maximum' and enter the correct height (in mm) into the input field labelled 'Measured ht(mm)' in the input window.
5/8)
Transfer the value you have just entered to the Bucky system by pressing the 'Apply' button.
6/8)
'Stored' and 'HEIGHT NOW' should show the value just entered and 'Last Apply' should show the last updated height.
7/8)
Repeat the procedure for the other height measurement.
8/8)
Press 'OK' to exit the adjustment.
OK=F3
Repeat=F4
Apply=F2
Cancel=F5

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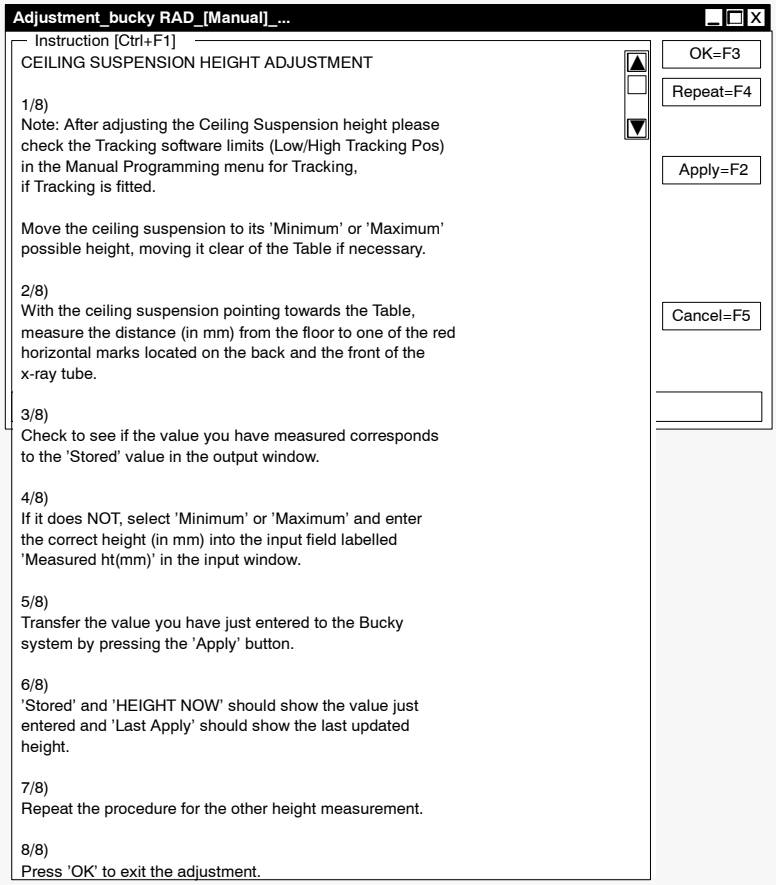
13.2. Adjustment of CS/FS height


Adjustment_bucky RAD_[Manual]_...
Instruction [Ctrl+F1]
CEILING SUSPENSION HEIGHT ADJUSTMENT
1/8)
Note: After adjusting the Ceiling Suspension height please check the Tracking software limits (Low/High Tracking Pos) in the Manual Programming menu for Tracking, if Tracking is fitted.
Move the ceiling suspension to its 'Minimum' or 'Maximum' possible height, moving it clear of the Table if necessary.
2/8)
With the ceiling suspension pointing towards the Table, measure the distance (in mm) from the floor to one of the red horizontal marks located on the back and the front of the x-ray tube.
3/8)
Check to see if the value you have measured corresponds to the 'Stored' value in the output window.
4/8)
If it does NOT, select 'Minimum' or 'Maximum' and enter the correct height (in mm) into the input field labelled 'Measured ht(mm)' in the input window.
5/8)
Transfer the value you have just entered to the Bucky system by pressing the 'Apply' button.
6/8)
'Stored' and 'HEIGHT NOW' should show the value just entered and 'Last Apply' should show the last updated height.
7/8)
Repeat the procedure for the other height measurement.
8/8)
Press 'OK' to exit the adjustment.
OK=F3
Repeat=F4
Apply=F2
Cancel=F5

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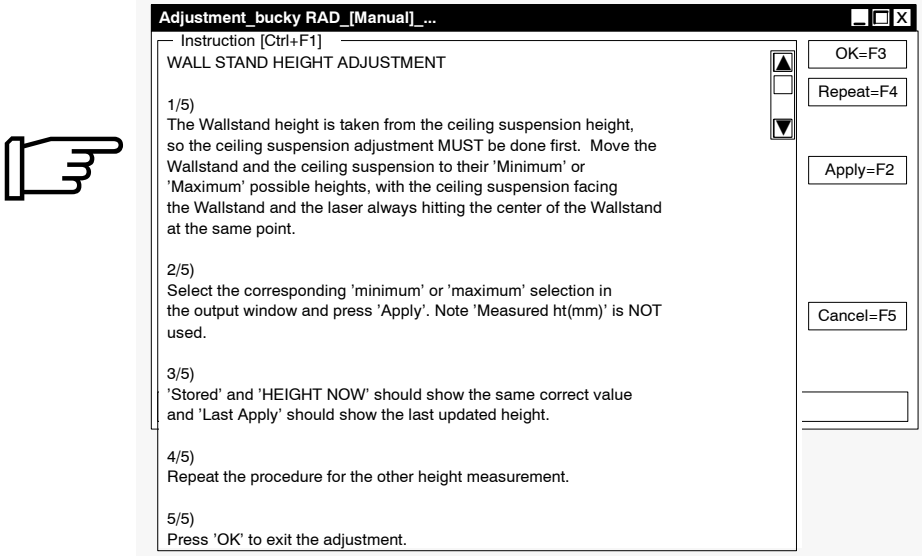
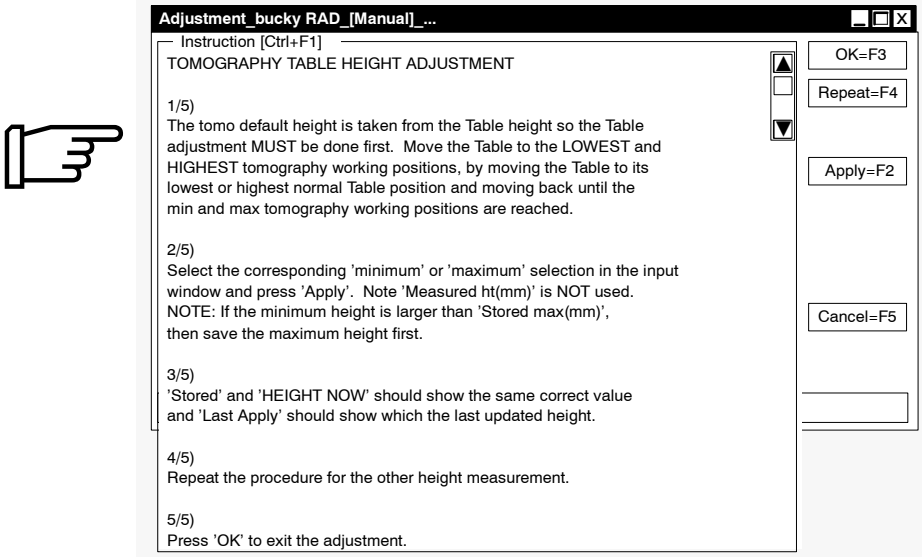
13.3. Adjustment of wallstand height


Adjustment_bucky RAD_[Manual]_...
Instruction [Ctrl+F1]
WALL STAND HEIGHT ADJUSTMENT
1/5)
The Wallstand height is taken from the ceiling suspension height, so the ceiling suspension adjustment MUST be done first. Move the Wallstand and the ceiling suspension to their 'Minimum' or 'Maximum' possible heights, with the ceiling suspension facing the Wallstand and the laser always hitting the center of the Wallstand at the same point.
2/5)
Select the corresponding 'minimum' or 'maximum' selection in the output window and press 'Apply'. Note 'Measured ht(mm)' is NOT used.
3/5)
'Stored' and 'HEIGHT NOW' should show the same correct value and 'Last Apply' should show the last updated height.
4/5)
Repeat the procedure for the other height measurement.
5/5)
Press 'OK' to exit the adjustment.
OK=F3
Repeat=F4
Apply=F2
Cancel=F5

13.4. Adjustment of tomography table height


Adjustment_bucky RAD_[Manual]_...
Instruction [Ctrl+F1]
TOMOGRAPHY TABLE HEIGHT ADJUSTMENT
1/5)
The tomo default height is taken from the Table height so the Table adjustment MUST be done first. Move the Table to the LOWEST and HIGHEST tomography working positions, by moving the Table to its lowest or highest normal Table position and moving back until the min and max tomography working positions are reached.
2/5)
Select the corresponding 'minimum' or 'maximum' selection in the input window and press 'Apply'. Note 'Measured ht(mm)' is NOT used.
NOTE: If the minimum height is larger than 'Stored max(mm)', then save the maximum height first.
3/5)
'Stored' and 'HEIGHT NOW' should show the same correct value and 'Last Apply' should show which the last updated height.
4/5)
Repeat the procedure for the other height measurement.
5/5)
Press 'OK' to exit the adjustment.
OK=F3
Repeat=F4
Apply=F2
Cancel=F5

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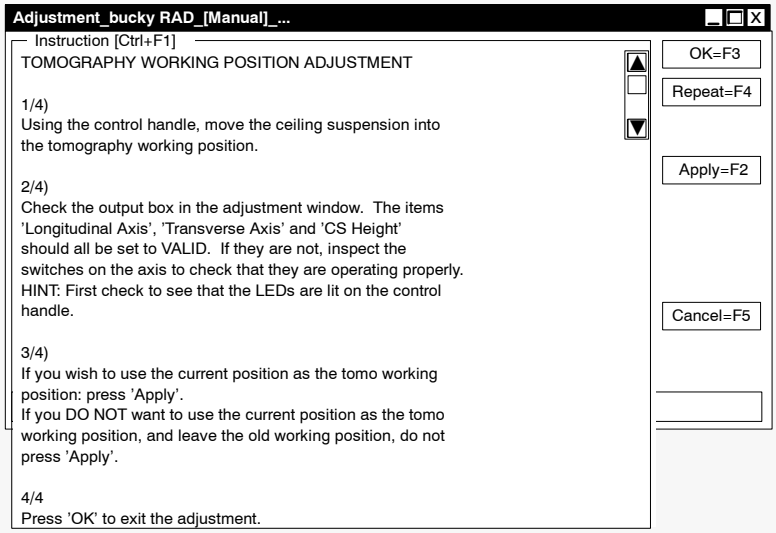
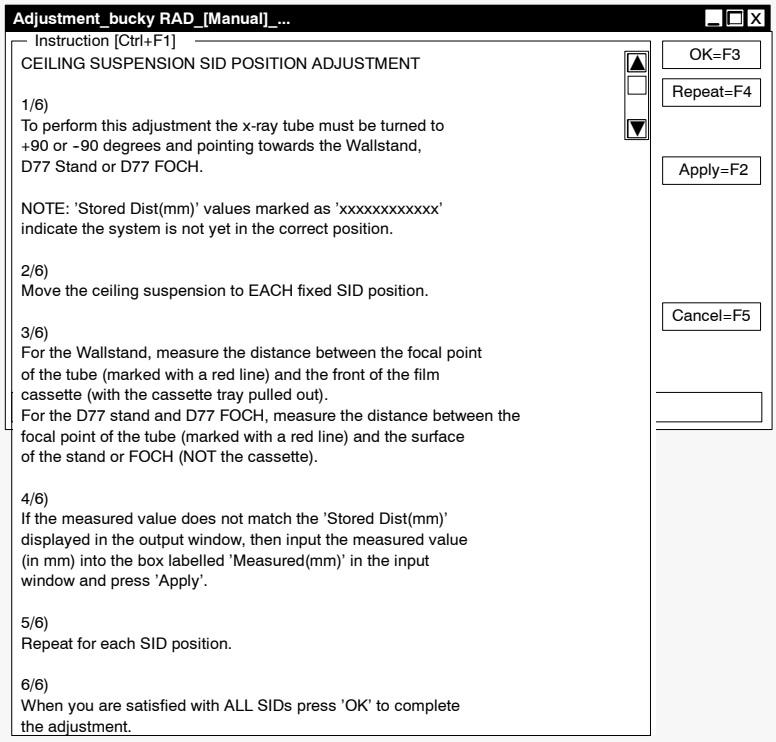
13.5. Adjustment of tomo working position


Adjustment_bucky RAD_[Manual]_...
Instruction [Ctrl+F1]
TOMOGRAPHY WORKING POSITION ADJUSTMENT
1/4)
Using the control handle, move the ceiling suspension into the tomography working position.
2/4)
Check the output box in the adjustment window. The items 'Longitudinal Axis', 'Transverse Axis' and 'CS Height' should all be set to VALID. If they are not, inspect the switches on the axis to check that they are operating properly.
HINT: First check to see that the LEDs are lit on the control handle.
3/4)
If you wish to use the current position as the tomo working position: press 'Apply'.
If you DO NOT want to use the current position as the tomo working position, and leave the old working position, do not press 'Apply'.
4/4
Press 'OK' to exit the adjustment.
OK=F3
Repeat=F4
Apply=F2
Cancel=F5

13.6. Adjustment of CS/FS SID positions


Adjustment_bucky RAD_[Manual]_...
Instruction [Ctrl+F1]
CEILING SUSPENSION SID POSITION ADJUSTMENT
1/6)
To perform this adjustment the x-ray tube must be turned to +90 or -90 degrees and pointing towards the Wallstand, D77 Stand or D77 FOCH.
NOTE: 'Stored Dist(mm)' values marked as 'xxxxxxxxxxx' indicate the system is not yet in the correct position.
2/6)
Move the ceiling suspension to EACH fixed SID position.
3/6)
For the Wallstand, measure the distance between the focal point of the tube (marked with a red line) and the front of the film cassette (with the cassette tray pulled out).
For the D77 stand and D77 FOCH, measure the distance between the focal point of the tube (marked with a red line) and the surface of the stand or FOCH (NOT the cassette).
4/6)
If the measured value does not match the 'Stored Dist(mm)' displayed in the output window, then input the measured value (in mm) into the box labelled 'Measured(mm)' in the input window and press 'Apply'.
5/6)
Repeat for each SID position.
6/6)
When you are satisfied with ALL SIDs press 'OK' to complete the adjustment.
OK=F3
Repeat=F4
Apply=F2
Cancel=F5

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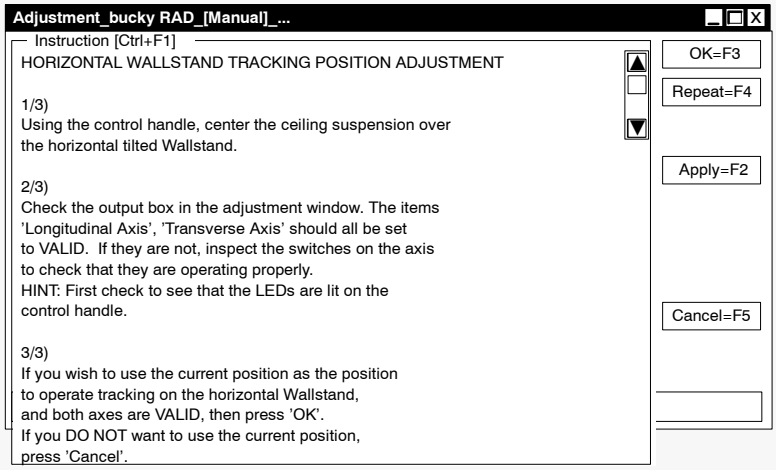
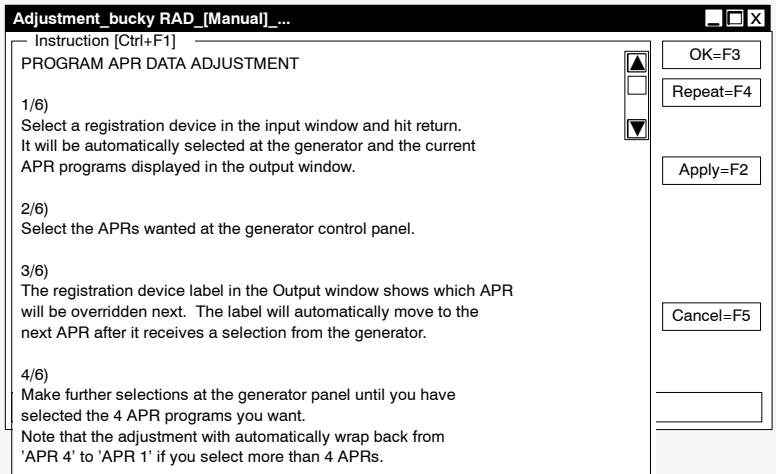
13.7. Adjustment of tracking of a tiltable wallstand


Adjustment_bucky RAD_[Manual]_...
Instruction [Ctrl+F1]
HORIZONTAL WALLSTAND TRACKING POSITION ADJUSTMENT
1/3)
Using the control handle, center the ceiling suspension over the horizontal tilted Wallstand.
2/3)
Check the output box in the adjustment window. The items 'Longitudinal Axis', 'Transverse Axis' should all be set to VALID. If they are not, inspect the switches on the axis to check that they are operating properly.
HINT: First check to see that the LEDs are lit on the control handle.
3/3)
If you wish to use the current position as the position to operate tracking on the horizontal Wallstand, and both axes are VALID, then press 'OK'.
If you DO NOT want to use the current position, press 'Cancel'.
OK=F3
Repeat=F4
Apply=F2
Cancel=F5

13.8. Adjustment of program APR data


Adjustment_bucky RAD_[Manual]_...
Instruction [Ctrl+F1]
PROGRAM APR DATA ADJUSTMENT
1/6)
Select a registration device in the input window and hit return.
It will be automatically selected at the generator and the current APR programs displayed in the output window.
2/6)
Select the APRs wanted at the generator control panel.
3/6)
The registration device label in the Output window shows which APR will be overridden next. The label will automatically move to the next APR after it receives a selection from the generator.
4/6)
Make further selections at the generator panel until you have selected the 4 APR programs you want.
Note that the adjustment with automatically wrap back from 'APR 4' to 'APR 1' if you select more than 4 APRs.
5/6)
Once you are satisfied with the 4 Bucky APRs, press 'Apply' to store the new programs into the Bucky controller. If you press 'OK' without pressing 'Apply', the currently stored Bucky APRs will NOT be changed.
6/6)
Repeat for each available registration device, then press 'OK' to return to the adjustment menu.
OK=F3
Repeat=F4
Apply=F2
Cancel=F5

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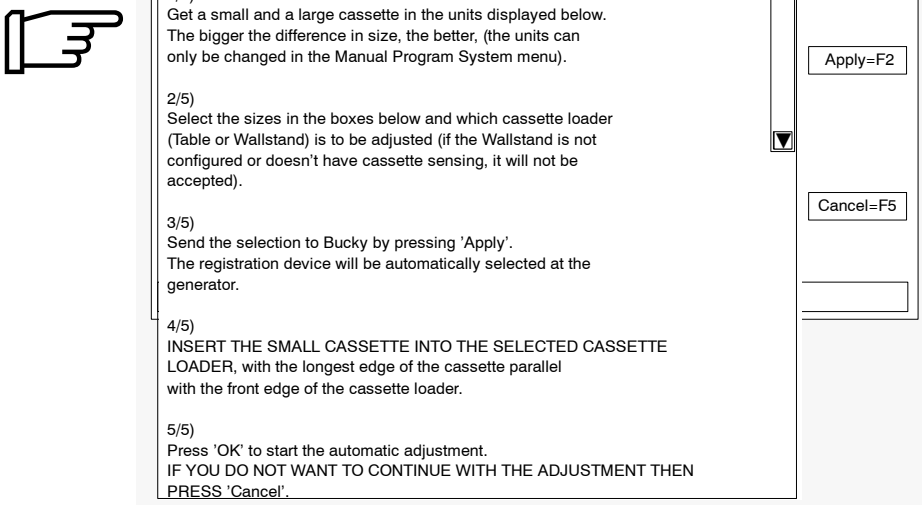
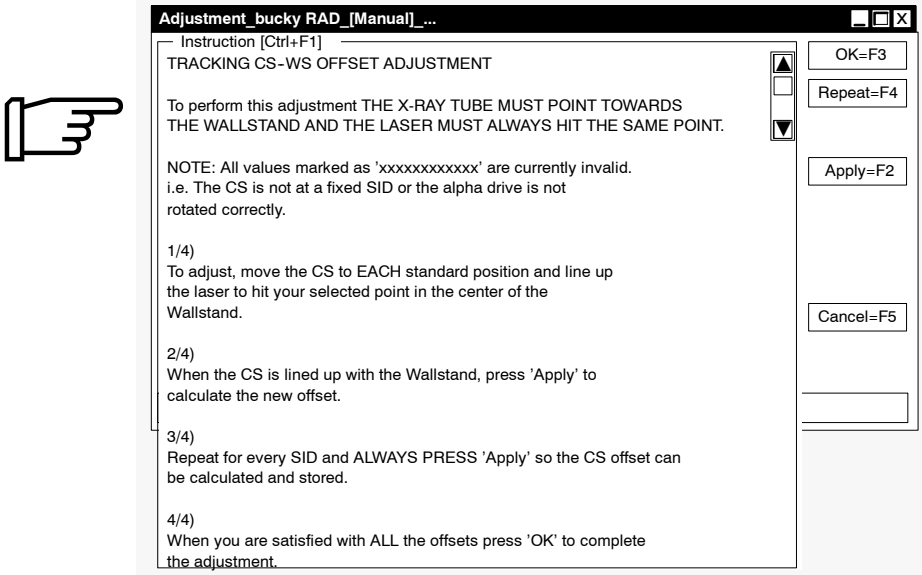
13.9. Adjustment of cassette loader


Adjustment_bucky RAD_[Manual]_...
Instruction [Ctrl+F1]
CASSETTE LOADER ADJUSTMENT
1/5)
Get a small and a large cassette in the units displayed below.
The bigger the difference in size, the better, (the units can
only be changed in the Manual Program System menu).
2/5)
Select the sizes in the boxes below and which cassette loader
(Table or Wallstand) is to be adjusted (if the Wallstand is not
configured or doesn't have cassette sensing, it will not be
accepted).
3/5)
Send the selection to Bucky by pressing 'Apply'.
The registration device will be automatically selected at the
generator.
4/5)
INSERT THE SMALL CASSETTE INTO THE SELECTED CASSETTE
LOADER, with the longest edge of the cassette parallel
with the front edge of the cassette loader.
5/5)
Press 'OK' to start the automatic adjustment.
IF YOU DO NOT WANT TO CONTINUE WITH THE ADJUSTMENT THEN
PRESS 'Cancel'.
OK=F3
Repeat=F4
Apply=F2
Cancel=F5

13.10. Adjustment of CS/FS tracking offset


Adjustment_bucky RAD_[Manual]_...
Instruction [Ctrl+F1]
TRACKING CS-WS OFFSET ADJUSTMENT
To perform this adjustment THE X-RAY TUBE MUST POINT TOWARDS
THE WALLSTAND AND THE LASER MUST ALWAYS HIT THE SAME POINT.
NOTE: All values marked as 'xxxxxxxxxxx' are currently invalid.
i.e. The CS is not at a fixed SID or the alpha drive is not
rotated correctly.
1/4)
To adjust, move the CS to EACH standard position and line up
the laser to hit your selected point in the center of the
Wallstand.
2/4)
When the CS is lined up with the Wallstand, press 'Apply' to
calculate the new offset.
3/4)
Repeat for every SID and ALWAYS PRESS 'Apply' so the CS offset can
be calculated and stored.
4/4)
When you are satisfied with ALL the offsets press 'OK' to complete
the adjustment.
OK=F3
Repeat=F4
Apply=F2
Cancel=F5

■

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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-07081

4-1...4-2	(04.1)		
2Z-10	(c/03.1)	A2/A3	4512 983 05791
2Z-10	(c/03.1)	A2/A3	4512 983 05801
2Z-10	(c/04.0)	A4	4512 983 07611

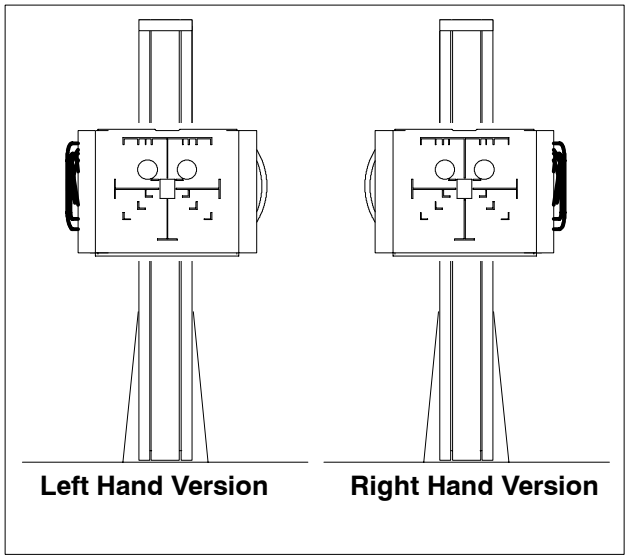
Final installation work / Labeling Bu.D. VE/VT, VE2/VT2

1. Reconstruction

1.1. Change from Left Hand Version to Right Hand Version

NOTE

Modification is not possible. The order must be placed, see questionnaire.

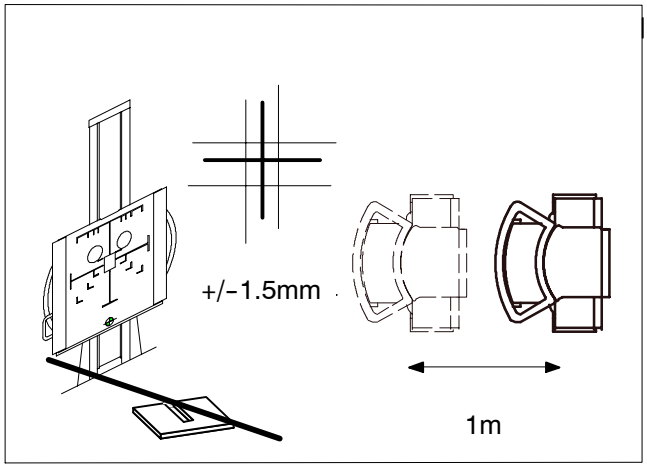


1.2. Alignment to BuckyDiagnost FS

- Swing the tube arm towards the bucky unit.
- Place a mirror on the front plate.
- Switch on the field illuminator.
  - Check the alignment.
- Move the column by **1m** in longitudinal direction.

The migration of the cross-hairs to the vertical line of the bucky unit must not exceed **+/-1.5mm**.

- Align the column rectangular with respect to the beam axis, use spacer if necessary.



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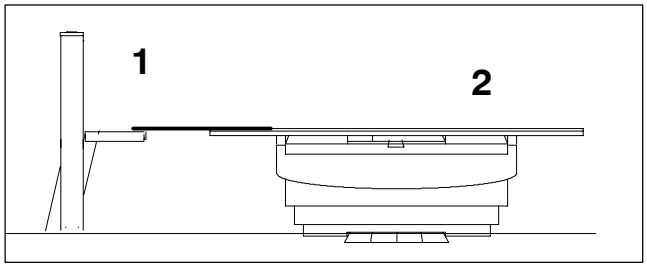
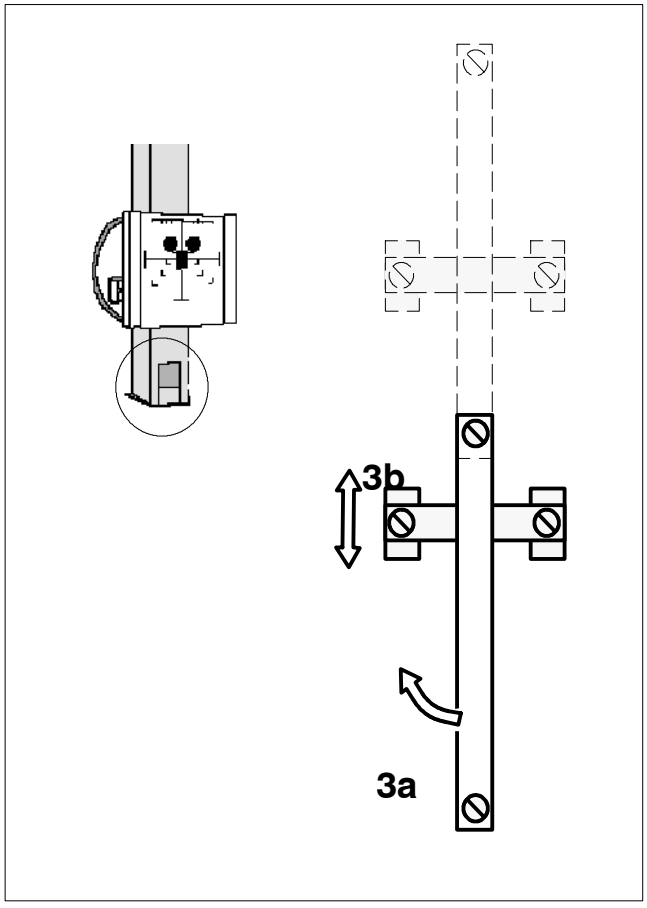
1.3. Switch Adjustment of BuckyDiagnost VT

The instruction of the following sentence is not needed if no BuckyDiagnost TH/TH2 is present.

In 90° position the bucky unit **1** should be adjusted to the same floor distance as the bucky unit in the table **2**.



- Tilt the bucky unit to the 90° position and adjust the floor distance (VPS1) at the switch element **3** via loosening screws.
  3a = wide adjust (swing of 180°)., **3b** = fine adjust.
- Fasten screws.



2. Finishing work

- Check the labelling, see supplied drawing of labelling.
- Install the covers of the column.
- If necessary, clean surfaces before handing the system over.

■

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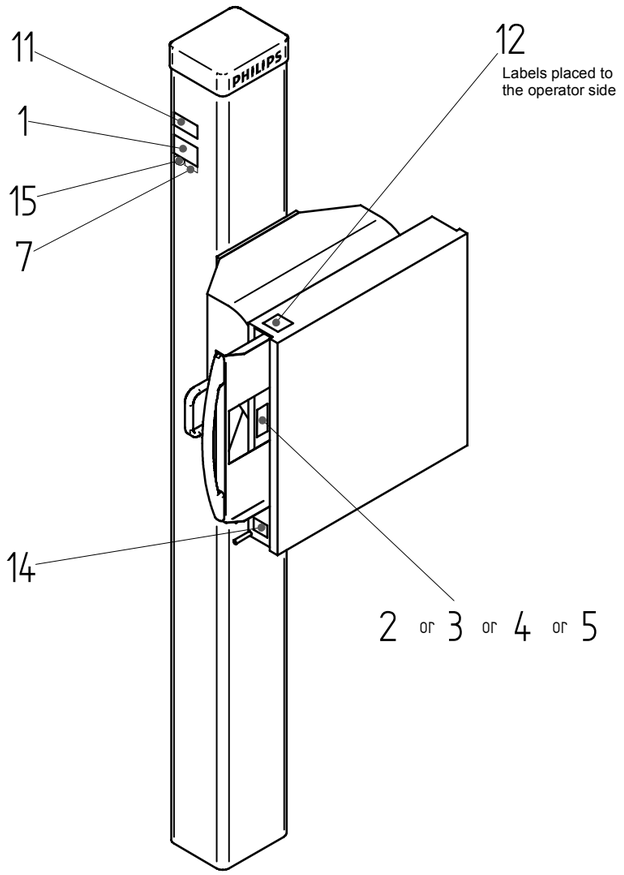

1

PHILIPS	Philips Medical Systems DMC GmbH Röntgenstr. 24 D-22335 Hamburg/Germany
type 9890 010 0651. s/n yy.00.nnn bucky DIAGNOST VE / VT	X-RAY EQUIPMENT WITH RESPECT TO ELECTRICAL FIRE, SHOCK AND MECHANICAL HAZARDS ONLY < 6418>
Class I - Type B IEC 60601-1	Associated equipment IEC 60601-2-32:1994
	CE 0123

15 CCC S

only sticked on
China-systems

2

PHILIPS	Philips Medical Systems DMC GmbH Röntgenstr. 24 D-22335 Hamburg/Germany
type 4512 201 0225. s/n yy.00.nnn bucky device right	C UL US
	24V ⎓ 350mA

type 4512 131 1758.
cassette tray right

or

3

PHILIPS	Philips Medical Systems DMC GmbH Röntgenstr. 24 D-22335 Hamburg/Germany
type 4512 201 0223. s/n yy.00.nnn bucky device sensing right	C UL US
	24V ⎓ 350mA

type 4512 131 1756.
cassette tray sensing right

or

4

PHILIPS	Philips Medical Systems DMC GmbH Röntgenstr. 24 D-22335 Hamburg/Germany
type 4512 201 0224. s/n yy.00.nnn bucky device sensing left	C UL US
	24V ⎓ 350mA

type 4512 131 1755.
cassette tray sensing left

or

5

PHILIPS	Philips Medical Systems DMC GmbH Röntgenstr. 24 D-22335 Hamburg/Germany
type 4512 201 0226. s/n yy.00.nnn bucky device left	C UL US
	24V ⎓ 350mA

type 4512 131 1757.
cassette tray left

11

type 4512 201 0228. s/n ___ bucky DIAGNOST VT	This product complies with the DHHS requirements of 21 CFR Sub-chapter J Manufactured: June 2001
C UL US - X-RAY EQUIPMENT - WITH RESPEC TO ELECTRICAL FIRE SHOCK ANDMECHANICAL HAZARDS ONLY 35B7	Made by HANS PAUSCH | CE

or

type 4512 201 0227. s/n ___ bucky DIAGNOST VE	This product complies with the DHHS requirements of 21 CFR Sub-chapter J Manufactured: June 2001
C UL US - X-RAY EQUIPMENT - WITH RESPEC TO ELECTRICAL FIRE SHOCK ANDMECHANICAL HAZARDS ONLY 35B7	Made by HANS PAUSCH | CE

12

14

X-RAY GRID
STREUSTRAHLENRASTER
GRILLE ANTIOFFUSANTE

Lp/cm		K	
ratio		B	
fo(cm)		Σ	

A2/A3 03-12-01 Schr.

bucky DIAGNOST VE/VT
Labelling

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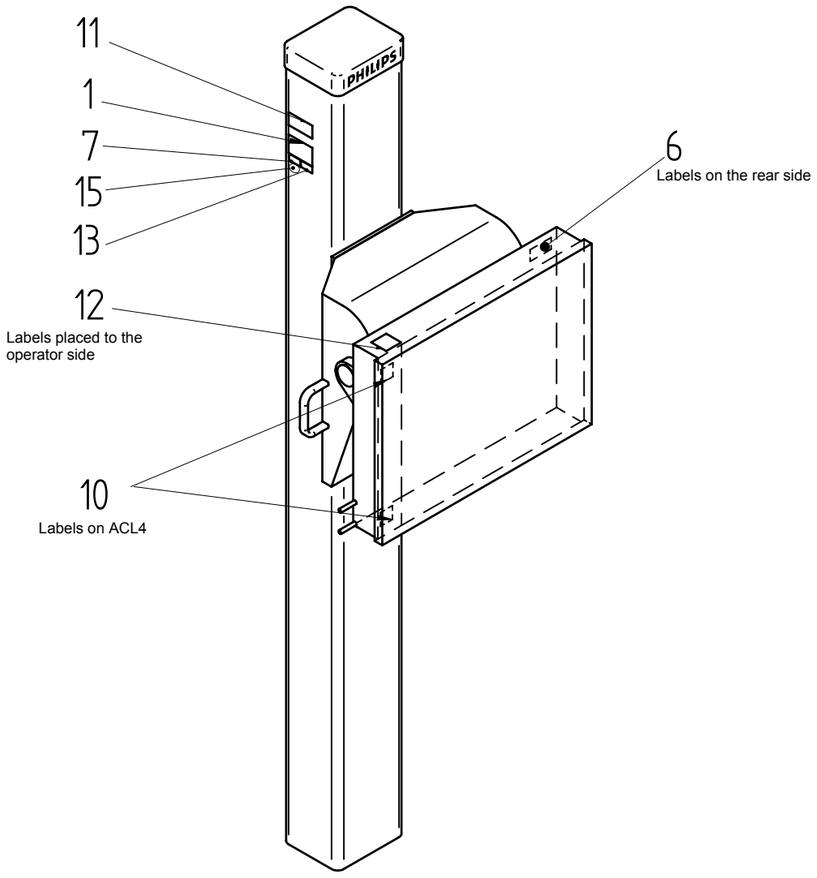

1

PHILIPS	Philips Medical Systems DMC GmbH Röntgenstr. 24 D-22335 Hamburg/Germany
type 9890 010 0651. s/n yy.00.nnn bucky DIAGNOST VE / VT	X-RAY EQUIPMENT WITH RESPECT TO ELECTRICAL FIRE, SHOCK AND MECHANICAL HAZARDS ONLY <641B>
Class I - Type B IEC 60601-1	Associated equipment IEC 60601-2-32:1994
0123	230V ~ 50/60Hz 0,5A

7 13

15

only sticked on China-systems

6

PHILIPS	Philips Medical Systems DMC GmbH Röntgenstr. 24 D-22335 Hamburg/Germany
type 9848 600 0260. s/n yy.00.nnn ACL4 f. bucky VE2 / VT2	

11

type 4512 201 0230. s/n ____ bucky DIAGNOST VT2	This product complies with the DHHS requirements of 21 CFR Sub-chapter J Manufactured: June 2001	
	Made by HANS PAUSCH	

oder

type 4512 201 0229. s/n ____ bucky DIAGNOST VE2	This product complies with the DHHS requirements of 21 CFR Sub-chapter J Manufactured: June 2001	
	Made by HANS PAUSCH	

12

10

A2/A3 03-12-01 Schr.

BuckyDiagnost VE/VT
with (ACL4)
Labelling

4512 983 05801 (c/03.1)
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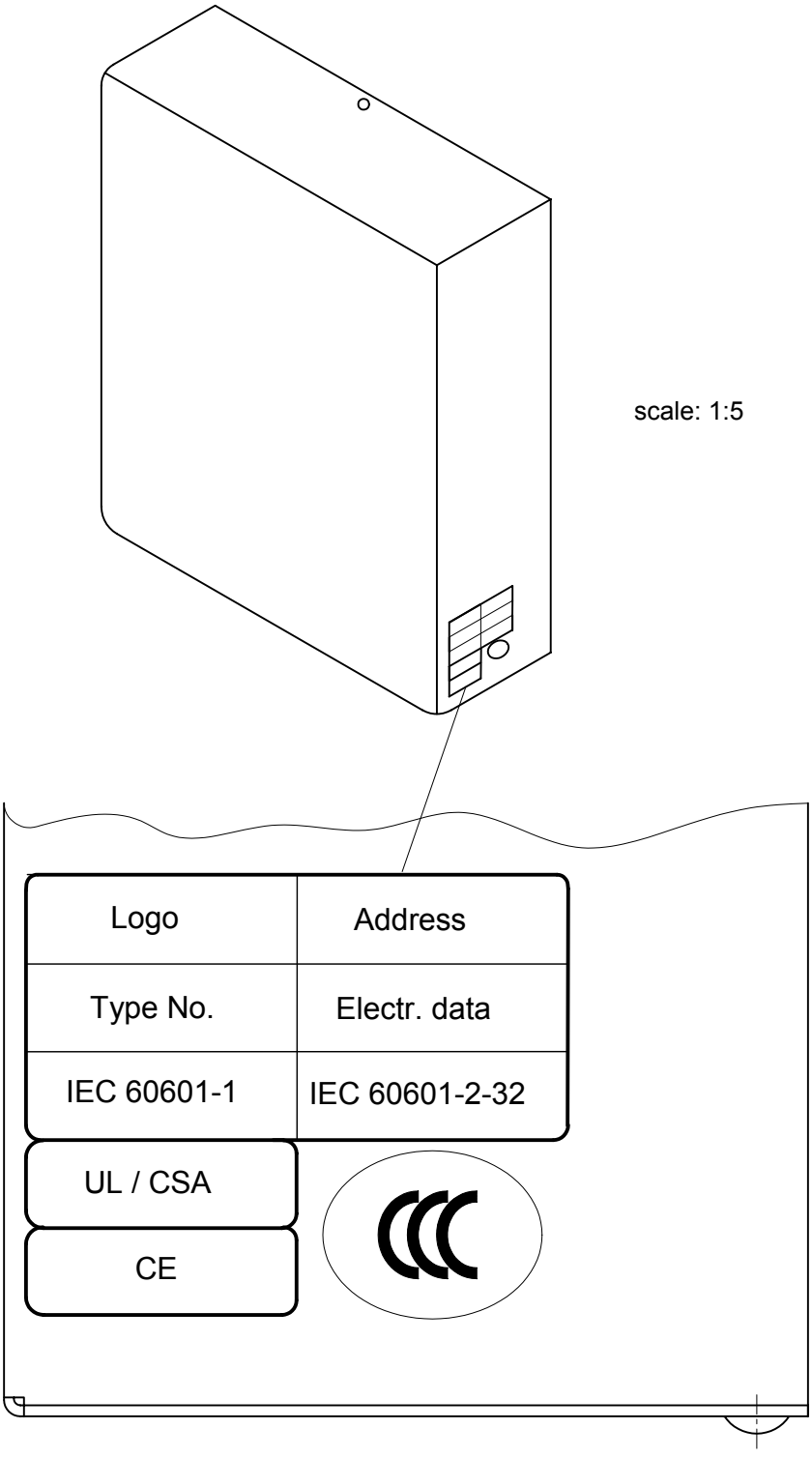

A4 04-05-26 Schr.

Segment control unit
Labelling

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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-02781

4-1...4-4	(04.1)		
2Z-10	(d/04.0)	A1/A3	4512-983-05451
2Z-10	(c/04.0)	A3/A4	4512-983-05471

Final Installation Work / Labeling of BuckyD. / DigitalD.

Contents

1. **Installation of the Table Covers** **4-2**
2. **Installation of the Tabletop** **4-3**
3. **Installing the table end covers** **4-3**
4. **Attaching the labels on the table top (only DigitalDiagnost)** **4-3**
5. **Final Work** **4-4**
6. **Labels** **4-4**

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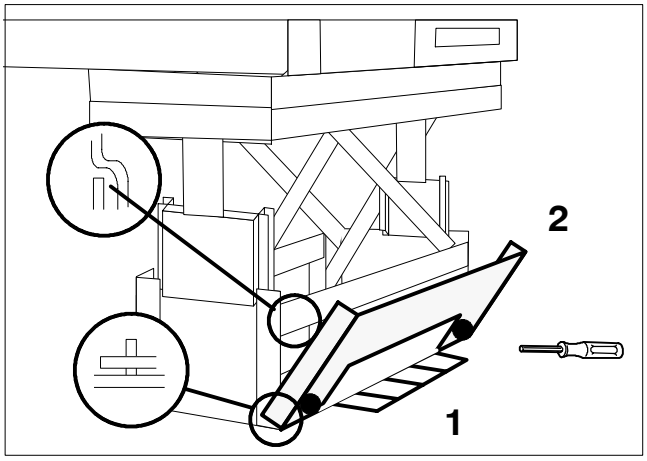
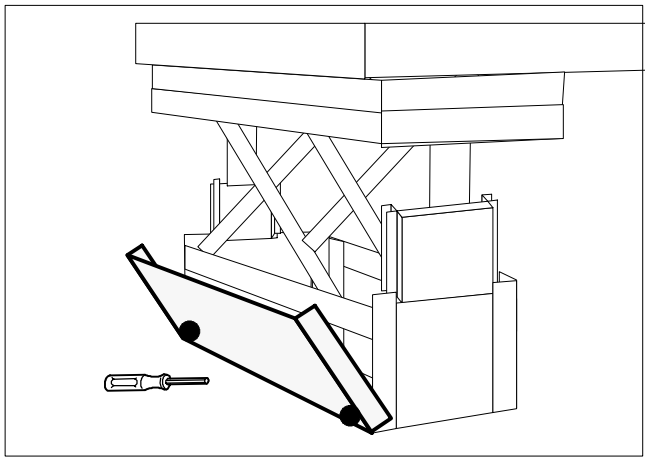
1. Installation of the Table Covers

- Raise the table to its uppermost position.
  To move up the table press foot switch ▲

- If neccessary adjust the rails so that the cover moves easily up and down.

- Lift up the foot switch assembly **1**.
- Fit the lower front cover **2** into pins and screw on.
- Connect the earth wire to the lower front cover.

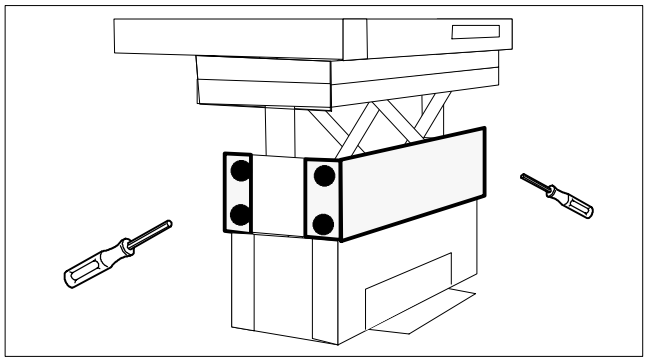




- Fit the lower rear cover into pins and screw on.

- Connect the earth wire to the lower rear cover.

- Insert the middle side covers at both sides to the table.



- Install both middle covers at the front and rear side. The covers are equal.
- Insert the screws at both covers and at both sides. Do not fasten the screws completely.

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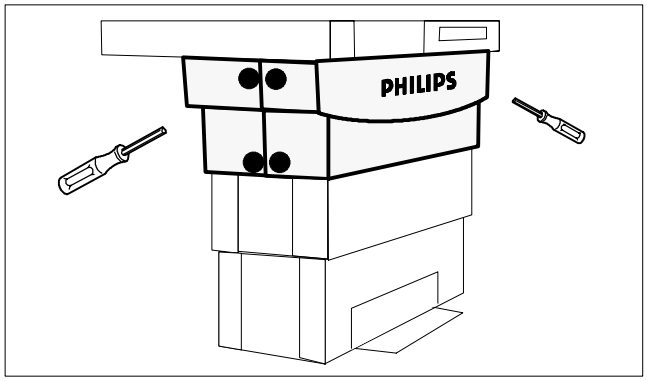
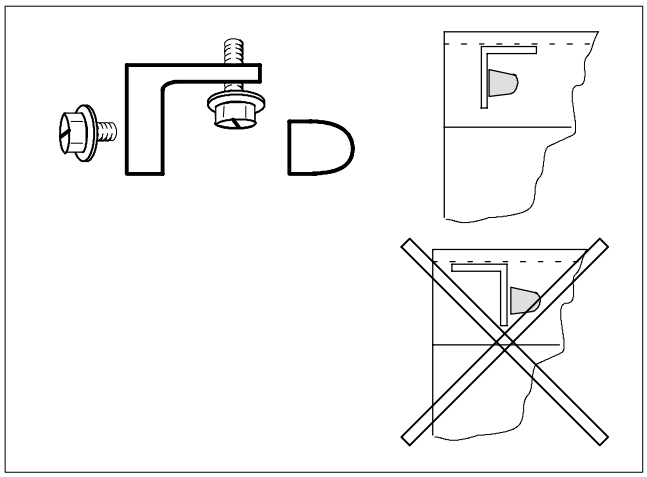
- Install the upper covers at the front and the rear side. The covers are equal. Do not fasten the screws completely.



- Adjust the covers.
- Fasten all screws.
- Move the table up and down and check whether the covers slide without any abrasion and noise.

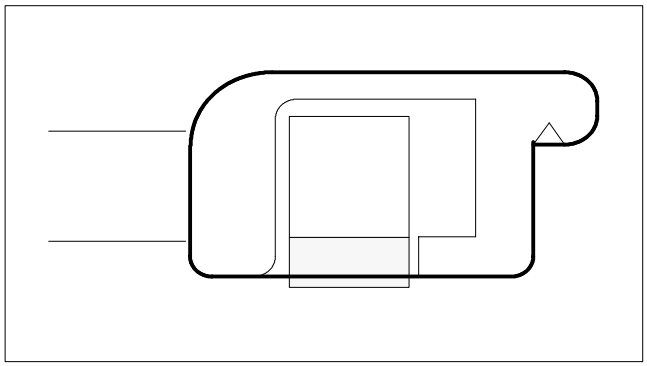
2. Installation of the Tabletop

- Check whether the ball bearings are adjusted correctly to the tabletop. If not, remove the tabletop and adjust the eccentric ball bearings.
- Install stop assemblies to the table rail proceed as follows:
  - Remove the parabolic buffer from the stop angle.
  - Screw the stop angle to the table rail (respect the “right direction”).
  - Screw the parabolic buffer to the stop angle.



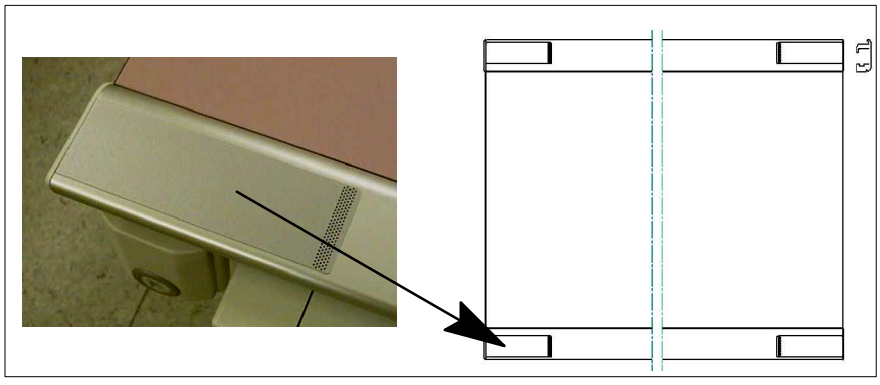
3. Installing the table end covers

- Install the end covers to the four table top edges.
- Check the level of the table again in both directions by using a spirit level.
  - If necessary use linings at table ground.
- Remove the protection foil from the footswitches.



4. Attaching the labels on the table top (only DigitalDiagnost)

- Stick the four lables on the aluminum frame of the table top as shown on the drawing. Each corner one label.



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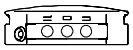
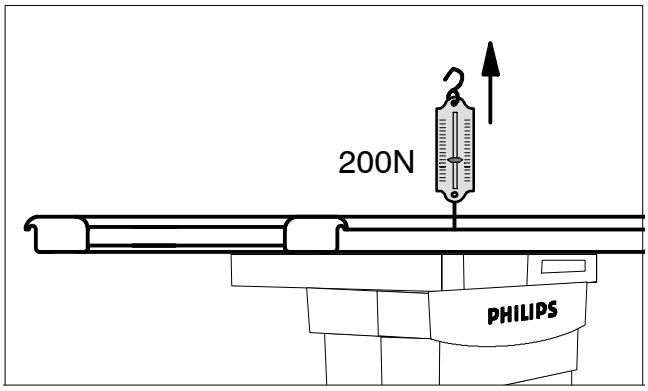
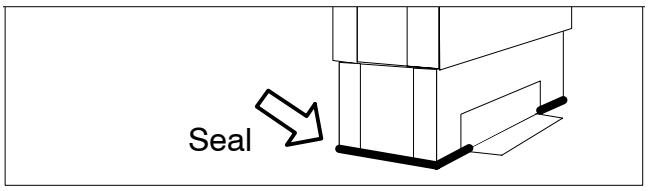
5. Final Work

- Check all table functions
  - table movement up and down switched by the foot switches ▲ and ▼
  - table movement up and down switched by the optional second table control 
  - function of longitudinal and transverse brakes.

- Check the collision switch.
  - Move the tabletop downwards.
    To move down the table press foot switch ▼
  - Lift with about 25kg manpower against the tabletop during movement table down.

The movement must stop automatically.





⚠ WARNING

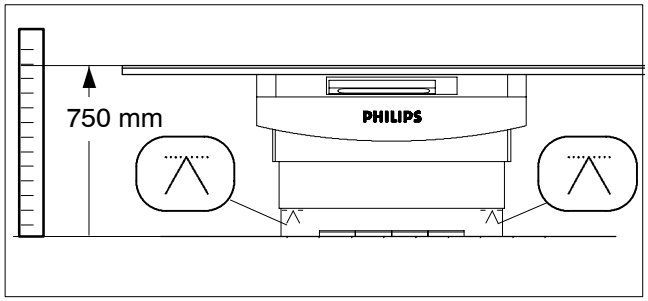
If the table does not move down press on tabletop with 200N.
Do not adjust the collision switch (SS10)!
This switch is factory adjusted.
To adjust the spring tension see
System Manual Corrective Maintenance,
Circuit Components, Collision Switch.

- Seal the base of the table with silicon.

- Clean all covers with a mildly cleaner like soapsuds.

- Move the table to the ”preferred table height position” (about 750mm), the table will stop automatically.

- Place the labels so that the dotted line is in line with lower edge of the mid cover.



6. Labels

- Check the labelling
  (for BuckyDiagnost TH/TH2 see 2Z-10)
  (for DigitalDiagnost see 2Z-10).

■

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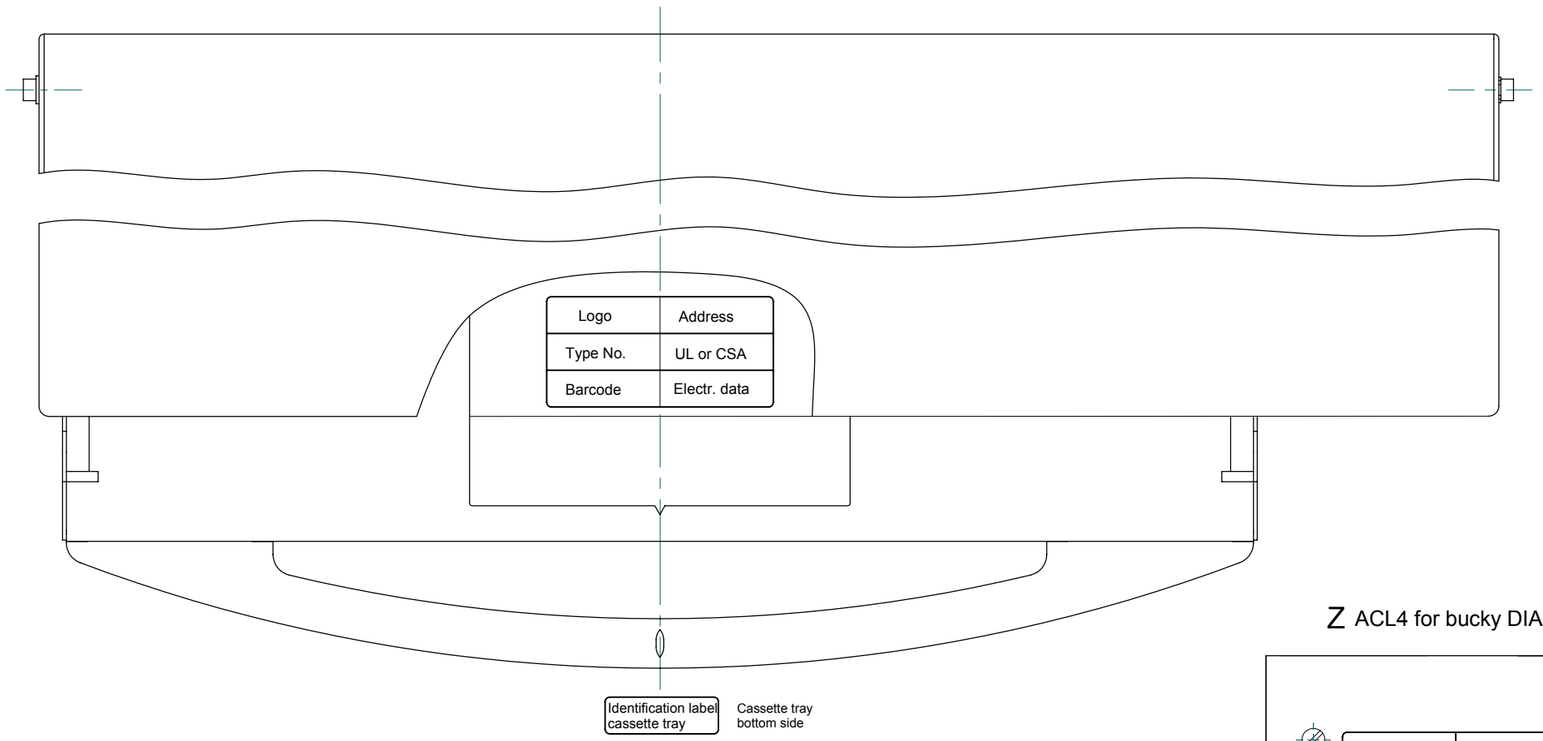
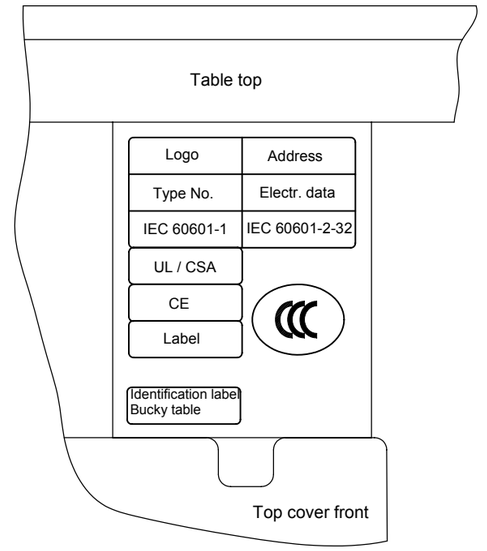
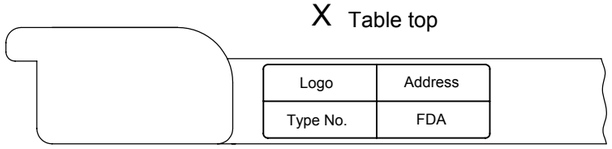
Y Bucky device



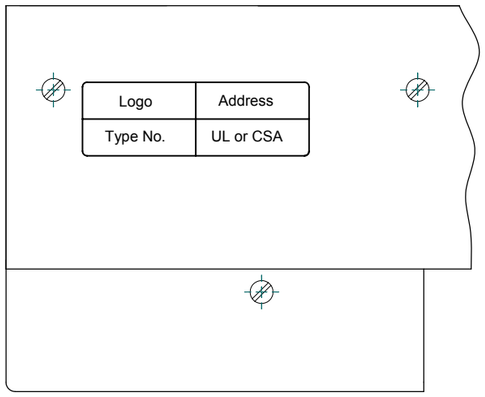
W Table height adjustable or V Table fixed height

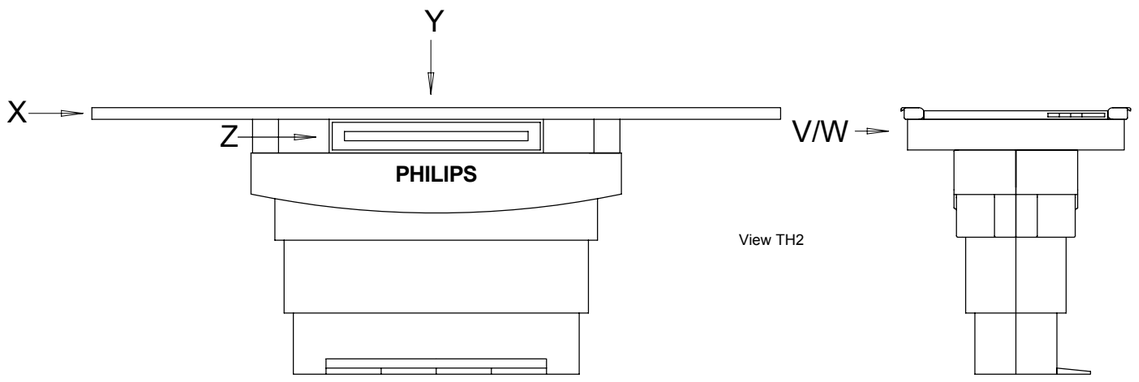


X Table top



Z ACL4 for bucky DIAGNOST TH2





A1/A3 04-05-11 Schr.

BuckyDiagnost TH2/TF
Labelling

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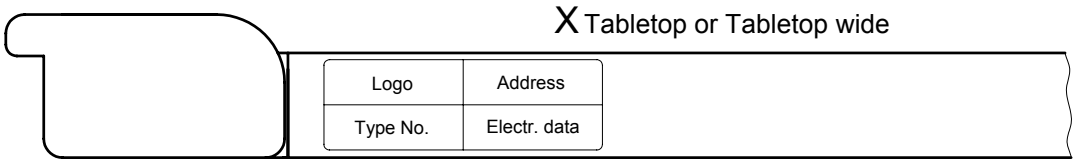

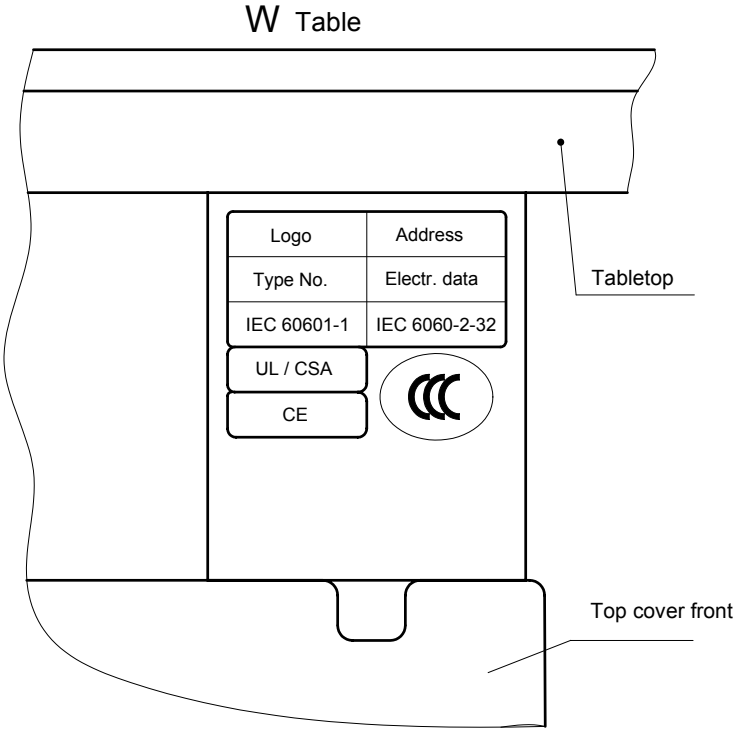

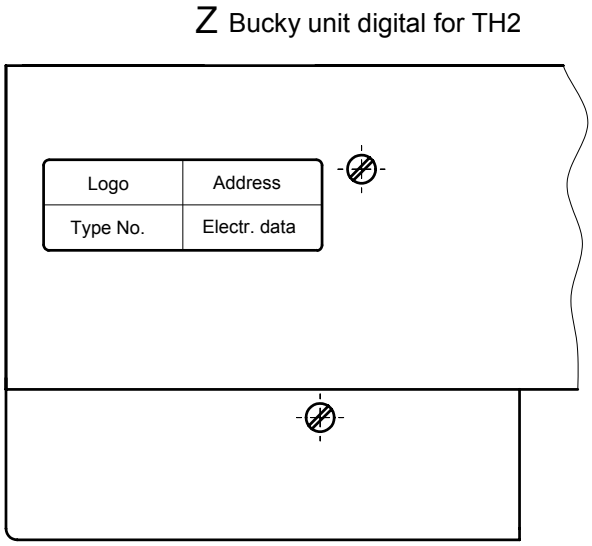

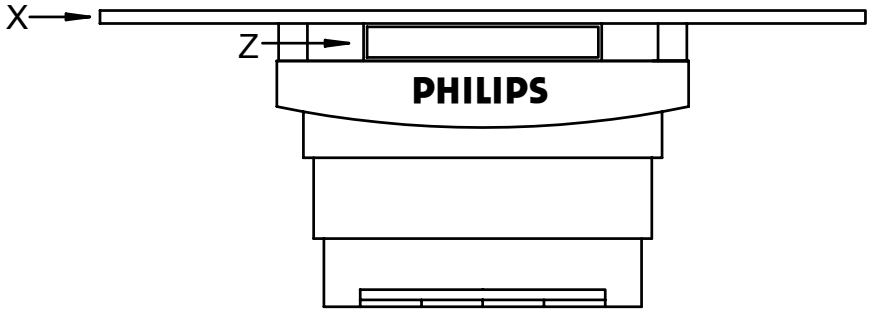

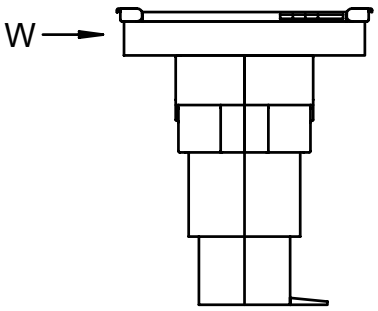

A3/A4 04-05-27 Schr.

DigitalDiagnost TH
Labelling

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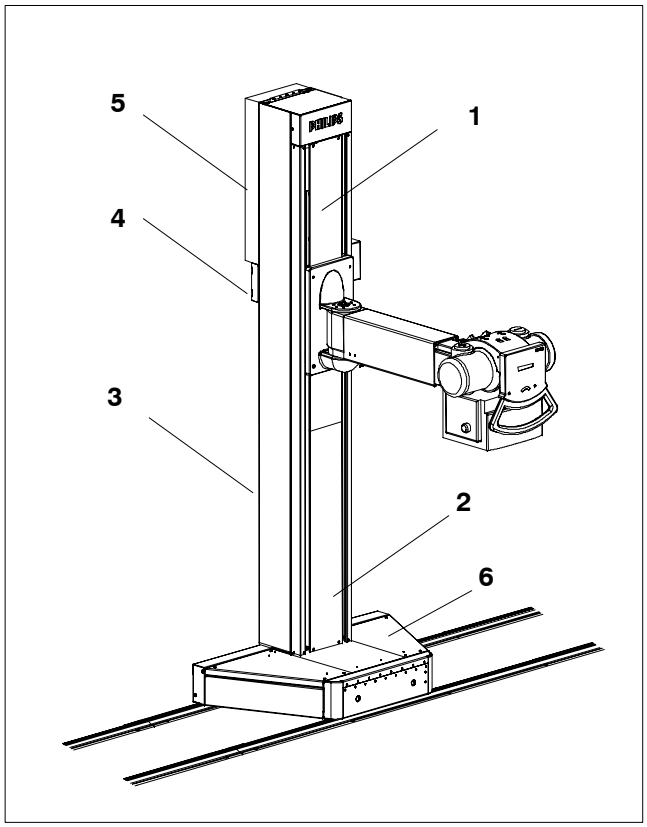
LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-07021

4-1...4-2 (04.1)

2Z-10 (b/04.0) A3 4512 983 07571

Final installation work / Labeling BuckyDiagnost FS



1. Installation of the column front covers

- Move the tube arm to its lowest position.
- Insert the front covers **(1,2)**. The shorter cover is located at the bottom.
- Connect the earth wire X75 to the cover.
- Fix both covers with four screws.

2. Installation of the rear bottom cover

- Connect the earth wire X73 to the cover.
- Fix the cover **(3)** with eight screws.

3. Installation of the cable support cover

- Connect the earth wire X74 to the cover.
- Fix the cover **(4)** with six screws.

4. Installation of the electronic rack cover

- Connect the earth wires X78,79 to the left and right side covers.
- Fix the cover **(5)** on both sides of the electronic rack each with four screws.

5. Installation of the column base cover (only FS Standard)

- Connect both earth wires X70 to the left and right side covers.
- Fix the cover **(6)** at both sides of the column base each with four screws.

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6. Installation of the column base catch plate / tomo cover (only FS Standard)

- Connect the earth wire X71,72.
- Shift the cover to the uppermost position.
- Fix the cover **(7)** with four screws.

7. Installation of column base side cover rear (only FS Standard)

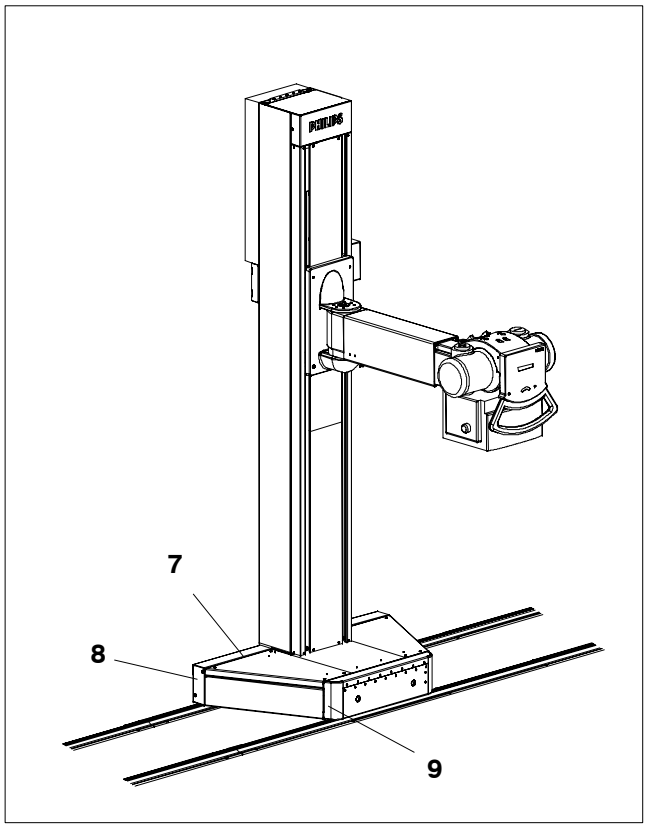
- Fix the cover **(8)** each with four screws.

8. Installation of column base side cover front (only FS Standard)

- Attach the cover **(9)**.

9. Check the Labeling

(See drawing 2Z-10)



■

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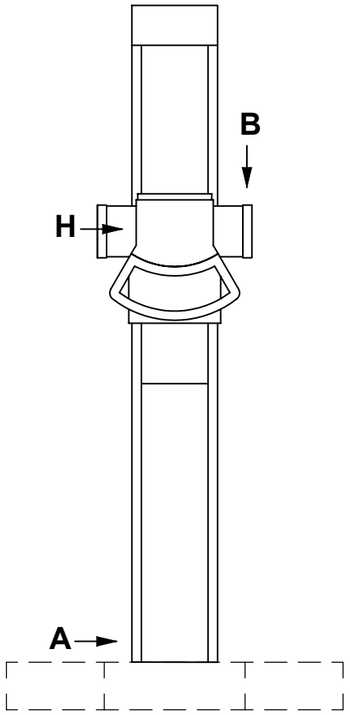
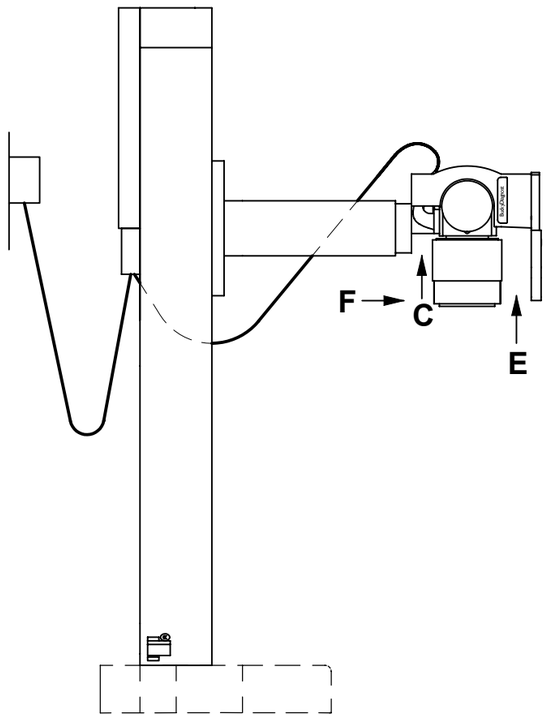
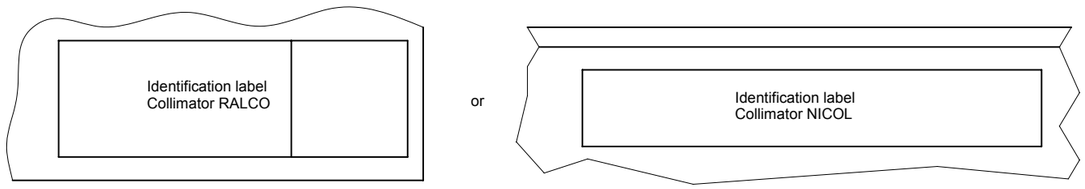
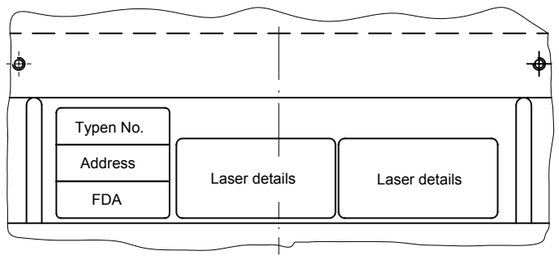




F Collimator



E Control grip



A System labels

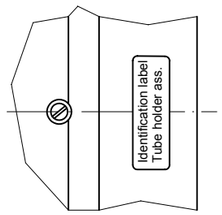
CE	
UL / CSA	
Logo	Address
Typen No.	Electr. data
IEC 60601-1	IEC 60601-2-32

Identifications label
Stand FS

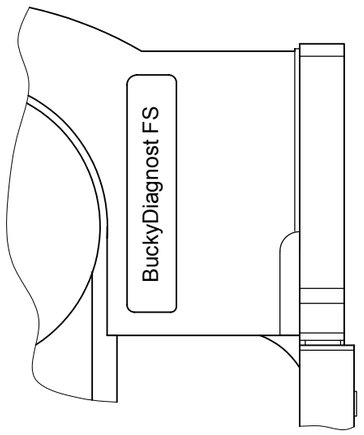
B

Labeling as indicated
in survey of tubes

C Tube holder assy



H Tube carrier



A1/A3 04-05-26 Schr.

BuckyDiagnost FS
Labelling

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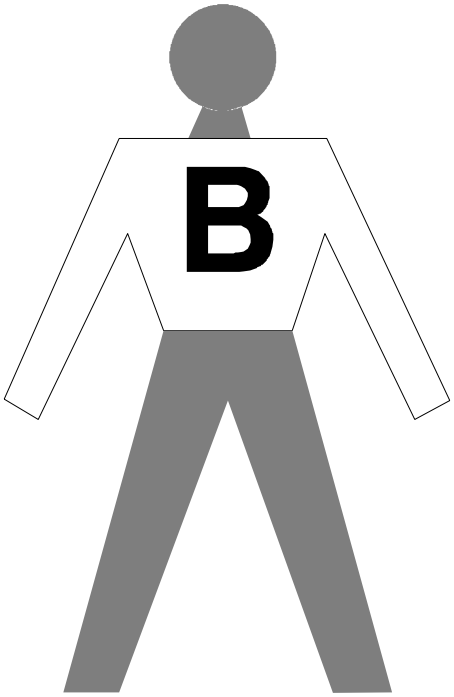
B

LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06101

4-1...4-5 (02.0)

Software XRGSCOPE

1. Installation software XRGSCOPE

1.1. PC and generator settings to avoid problems during up/downloading of CU complete files

Optimus RAD release 2.x and 3.x CMOS data are up/downloaded in one string without handshake.

Any kind of interruption can cause the loading process to fail.

Problems occur mainly during the download to the PC.

A download file which is not complete cannot be used as a safety backup file.

1.1.1. Preparation of the service PC to guarantee a safe loading process

Start XRGSCOPE always from DOS if possible.

When using any WINDOWS version:

- Switch OFF all screensavers.
- Do not run other programs.
- Do not insert any CD in the drive.

Any kind of power management of the PC hardware (BIOS) as well as the windows power management should be switched OFF.
If connected to mains power some of these might be automatically OFF.

1.1.2. Preparation of the generator

Preparation of generators without a CAN interface:

- Switch ON the generator.
  The loading process can be started once relay ENK1 has been energized.

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Preparation of generators which are connected via a CAN interface:

- BuckyDiagnost TH and TH2
- DigitalDiagnost
- Thoravision

• Disconnect the following plugs:

System	Connector		
	EZX23 signal bus	EZX42 or EZX42-1 system CAN	EZX43 or EZX43-1 system CAN
BukyDiagnost TH / TH2	X		X
DigitalDiagnost	X	X	X
Thoravision	X	X	X

• Switch ON the generator.

NOTE

The download procedure must not be started before relay ENK1 has been energized at least 2 minutes after the generator has been switched ON.

NOTE

In case of mailing CU complete download files or any other xxx.TDL files use a zipped file format. These files are ASCII files which might be destroyed while being mailed.

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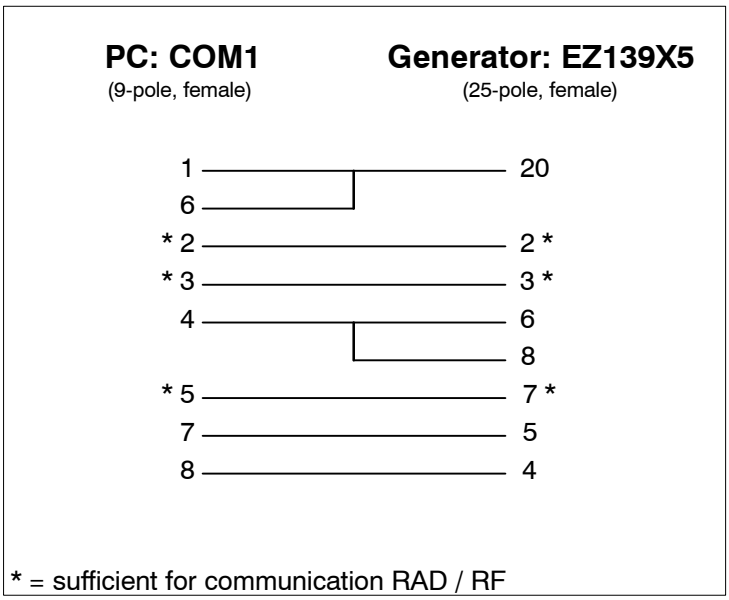
1.2. Installation procedure

- Provide the service PC with the hardware key and switch it ON.
  The hardware key provides access to special program settings and to menu ***"Faultfind".***
  Standard programming is possible without a hardware key.
- Connect the PC to X5 on EZ139 CENTRAL UNIT CU via a serial data cable:
  (A 5m long data cable can be ordered via 12NC: 4512 130 56931)



- Insert the floppy disks containing the self-unpacking exe-files of the firmware in the disk drive of the PC:
  - OMA : 4512 116 022xx
  - OMB : 4512 116 023xx

  For unpacking on the harddisk of the PC about 5MB are needed.
- Generate a directory e.g. [C:\OPT_R_35] on the PC by typing **<md C:\OPT_R_35>** or use WIN commands.
- Copy the firmware from both floppy disks to the PC into the same directory C:\OPT_R_35 by typing **<copy A:*.* C:\OPT_R_35>** or use WIN commands.
- Start unpacking the programs by typing **<OMAxxxxx.exe>** and **<OMBxxxxx.exe>** or doubleclick on **<*.exe>** -files.
  The programs unpack all files needed for the update of the firmware and the newest service tools.
- After unpacking [OMAxxxxx.exe] and [OMBxxxxx.exe] can be deleted on the harddisk by typing **<del OMAxxxxx.exe>** and **<del OMBxxxxx.exe>**.
- For the current contents [of OMA/OMBxxxxx.exe] read [OMA/OMBxxxxx.txt] on the floppy disks.
- For a new installation of the generator firmware see subsystem manual OPTIMUS RAD section 4 REPLACEMENT, chapter 4
  "Exchange of firmware ...".
- Call the installation program by typing ***<xrgscope>*** or ***<xrgscope lcd>*** for PCs with LCD screen.

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- Start with a XRGSCOPE-screen CUSTOMER.tdl with data which are actually stored in CUSTOMER.tdl. Type “XRGSCOPE customer”
  Whenever data screens like *’error log index’* are saved to a xxx.TDL file (function **save <F3>** appears in the bottom line), *‘customer data’* being saved in the CUSTOMER.tdl file are attached to the saved data screen. It helps to separate saved screen files of different sites, customers or rooms in the same hospital.
  Site data must be stored in CUSTOMER.tdl file, only data of this file are attached to the saved screens. One can save site specific customer data in self-made files using **<F3>**. To recall site data use the **load <F4>** function.

  Procedure:
  Either the CUSTOMER.tdl screen is open or open the *‘Customer Data’* screen. Push **<F4>** and select a site data file. The old data screen comes up. Now save this screen with **<F3>** typing in CUSTOMER as file name.

  - **Customer Name:**
  - **City** / **State:**
  - **Country:**
  - **Generator Location:**
  - **Generator Serial Number:**
  - **Generator 12 NC:**
  - **Memo1:**
  - **Memo2:**
  - **Memo3:**

  After **<ESC>** the following menu line appears:

File	***OPTIMUS***	***Select Unit***	***Options***	***Help***

- Select ”OPTIMUS”.

  The following menu line appears:

Program	***Adjust***	***Accept***	***Faultfind***	***Quit***

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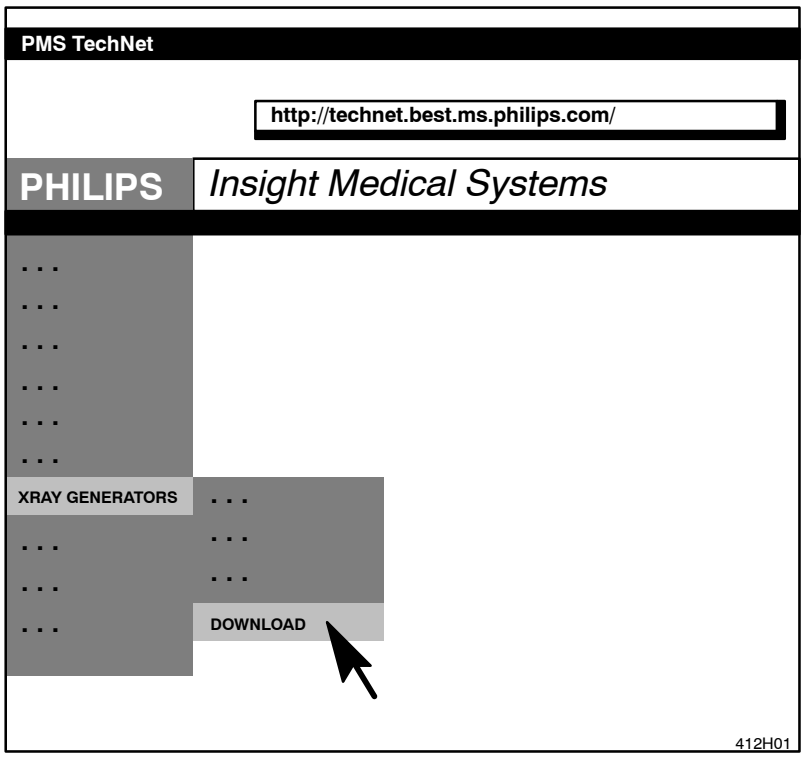
General information:

- Button **<F1>** **<help>** Call help / cancel help.
- Button **<F2>** **<transmit>** Store screen contents / data set in the generator ==> transmit to generator.
- Button **<F3>** **<save>** Store data screen on disk.
  For an open data screen the path desired can be selected.
- Button **<F4>** **<load>** Load data set from disk.The desired path can be selected.
- Button **<ESC>** Commands one step back. Can be used repeatedly.
- Fields with ↓ Select the possible range of values by pushing **<RETURN>**.
  The data are specified by the generator as fixed values.
- Fields with **[...]** Input of data via the keyboard.

Error numbers which appear at the beginning of the programming procedure must be erased from the screen by pushing the **<RETURN>** key.

Current data files, for instance, for online help, tube types, APR programming are available in the PHILIPS-Intranet. Use path: ***http://technet.best.ms.philips.com/*** and pull down menu as shown below.



If the installation program is called with **<xrgscope ?>** the possible starting parameters for the service program are listed.

■

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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06111

4-1...4-13 (02.0)

Z1-1.2	(97.0)	A1/A3	4512 983 05751	2Z-2.5	(a/01.0)	A4	4512 983 05641
Z1-15.1	(97.0)	A1/A3	4512 983 05571	2Z-2.6	(01.0)	A4	4512 983 05651
2Z-2.0	01.0)	A4	4512 983 05591	2Z-2.8	(01.0)	A4	4512 983 05671
2Z-2.2	(a/01.0)	A4	4512 983 05611	2Z-2.9	(01.0)	A4	4512 983 05681
2Z-2.4	(a/01.0)	A4	4512 983 05631	2Z-2.10	(01.0)	A4	4512 983 05691

Configuration part 1

Contents

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1.1. Configuration 4-3
1.1.1. Date and time 4-3
1.1.2. Mains data 4-3
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1.2.2. Interface assignment 4-12
1.2.3. Examples for RGDV programming 4-13

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1. Setting-to-work overview

NOTE

The programming of a generator must take place in the sequence specified below.

As long as no tube or RGDV has been assigned there is no display at all on the desk except “PHILIPS OPTIMUS”.

1.1. Configuration

1.2. Registration devices
- RESET the generator

1.3. Tube adjustment
- RESET the generator

1.4. Dose rate control
- RESET the generator

1.5. Application limits
- RESET the generator

1.6. Human interface
- RESET the generator

1.7. Option: Tomo Density Control TDC

1.8. Option: VARIOFOCUS

1.9. Option: Area Dose Calculator

1.10. Acceptance test

1.11. Interlock facility for APR modification

1.12. Backup of all configuration data

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1.1. Configuration

- Switch the generator ON.

1.1.1. Date and time

- Select menu:
  PROGRAM/ **DATE AND TIME**
- Enter the respective local data.

1.1.2. Mains data

- Select menu:
  PROGRAM/ **MAINS DATA**

- Select the nominal value of the mains voltage U.
  Range: 380V, 400V, 440V, 480V
  Default: 400V
  If 460V is present program 480V.
  If 415V is present program 400V.
- Enter the maximum internal mains resistance R_i.
  Range: 0 ... 500mΩ

Depending on the internal mains resistance and the mains voltage the generator calculates the maximum possible output.

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1.1.3. Tubes

NOTE

Generators which are connected by a CAN interface have to be prepared as described below.

Preparation for:

- BuckyDiagnost TH and TH2
- DigitalDiagnost
- Thoravision

• Disconnect the following plugs:

System	Connector		
	EZX23 signal bus	EZX42 or EZX42-1 system CAN	EZX43 or EZX43-1 system CAN
BukyDiagnost TH / TH2	X		X
DigitalDiagnost	X	X	X
Thoravision	X	X	X

• Switch ON the generator.

NOTE

The download procedure must not be started before relay ENK1 has been energized at least 2 minutes after the generator has been switched ON.

Do not care if the generator is not programmed yet.

1.1.3.1. Tube data set

• Select menu:
PROGRAM/ TUBES/TUBE 1 ... 3/ **TUBE 1 ... 3 DATA SET**

• Start the displayed file *TUBExxx.tdl* with <RETURN>.
All the permitted combinations of tube type and housing type are listed in a window.

• Select the respective combination of tube type and housing type from the list and push <RETURN>.

• RESET the generator.
Then the data which have been configured up to now are read by the processor when the system is started.

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1.1.3.2. Tube speed selection

Depending on the type of tube loaded the anode speed is automatically programmed.

Modifications, if necessary, may only be performed if a hardkey is used on the PC.

CAUTION

Wrong programming can cause tube problems.

- Select menu:
  PROGRAM/ TUBES/TUBE 1 ... 3/ **TUBE 1 ... 3 SPEED SELECTION**

RPM \ tube type	RO	SRO
Exposure rotation [RPM]	3000	9000
Fast exposure rotation [RPM]	n/a	n/a

1.1.3.3. Tube limits

- Select menu:
  PROGRAM/ TUBES/ **TUBE LIMITS**
- Program the maximum working voltage which is indicated on the data label:

  Max. tube voltage limit
  Range: 40 ... 150kV
  Default: 150kV
  Adaptation of the tube takes place only up to this limit.

NOTE

If older tubes are to be operated on this generator, it is urgently recommended that the max. kV used in practical operation so far be specified instead of the theoretically possible value.
The max. kV value should be determined during the conditioning procedure as described in chapter 1.3.1 (modul Configuration part 2).

After adaptation of a tube the upper kV limit is displayed for each focus of each tube under:
Adapted to [kV]: e.g. 125kV

All the other limit programmings are performed by the generator automatically and do not usually have to be observed.

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1.1.3.4. Capacitance of tube connection

- Select menu:
  PROGRAM/ TUBES/ **CAPACITANCE TUBE CONNECTOR**

Range: 2.000 ... 10.000nF

The total capacitance for each tube connected is indicated:

$C = \frac{1}{2} (C_{H.V.\ generator} + C_{H.V.\ cable})$

= 4.550nF Default for H.V. generator + 20m H.V. cable (155pF/m)

$$C\ [nF] = 3 + \frac{C_c \times L}{2000}$$

C_c = specific cable capacitance in [pF/m]
L = single cable length in [m]

Single length [m]	Capacitance tube connection [nF]	
	For 155pF/m cable	For 200pF/m cable
14	4.085	4.400
16	4.240	4.600
18	4.395	4.800
20	4.550	5.000
22	4.705	5.200
24	4.860	-
26	5.015	-
28	5.170	-
30	5.325	-

The high-voltage cables type 9806 402 6xx02 currently being supplied have a capacitance of 155pF/m.

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1.1.3.5. Tube operating modes

- Select menu:
  PROGRAM/ TUBES/ **TUBE OPERATING MODE**

  - Intermediate boost:

    Select ... Disable = During preparation the rated filament current is applied (default).

    Enable = During preparation a reduced filament current is applied.
    After the release of exposure boosting takes place for a short time before the exposure is released. Effective with tube currents > 80% of max. value.

  - Rotation prolongation after PREP:

    Select ... Disable = The tube is braked as soon as preparation has been cancelled.

    Enable = After cancellation of preparation the tube is only braked after 30s. Within this time preparation can be repeated as often as necessary.
    Recommended for paediatrics and casualty rooms.
    The enable mode works with high speed rotor control unit only.

1.1.3.6. Disable tube

For correction of the configuration.

- Select menu:
  PROGRAM/ TUBES/ **DISABLE TUBE**

When the tube is disabled the above stored data set of the tube is erased. To enable the tube the data set has to be loaded again.

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1.2. Registration devices

1.2.1. Data set A ... B

- Select menu:
  PROGRAM/ REGISTRATION DEVICES/ RGDV 1 ... 8/ **DATA SET A ... B**
- Program the data set A and B of RGDV 1 ... 8 for all exam. / aux. units desired.

Note
*Programmings written on a grey background and marked by a "*****" have to be done but do not affect the functions of this generator RAD type. (They are made for generators R/F version).*

<table>
<tr><th colspan="2">Data set A</th></tr>
<tr><td>Room:</td><td>Room number of the exam. / aux. unit for room decade
(radiation warning display and door contact).</td></tr>
<tr><td>Tube:</td><td>Tube assignment for the exam. / aux. unit.</td></tr>
<tr><td>Release circuit number:</td><td>Number of the release decade of the release circuit adaptation unit WA (e.g.: 1 for X1 etc., see Z1-1.2).</td></tr>
<tr><td>Enable handswitch at generator desk:</td><td>
<table>
<tr><th>Programming</th><th>Enable release switch at generator desk</th><th>Enable external release switch 1)</th></tr>
<tr><td>NO</td><td></td><td>X</td></tr>
<tr><td>YES</td><td>X</td><td></td></tr>
<tr><td></td><td>X</td><td>X</td></tr>
</table>
</td></tr>
<tr><td>Syncmaster present:</td><td>NO = Free cassette (without cassette present interlock)
YES = – Bucky or tomo synchronous contact 2)
– WA 4:1–2 (20/21)</td></tr>
<tr><td>Exposure switch type:</td><td>Single step = Exposure request instantly with preparation 1)
Double step = Individual preparation request and exposure request</td></tr>
<tr><td>Bucky format density correction:</td><td>Density correction in steps of 6%. Range: –8 ... +8
Correction during collimation, input at WAX11/12 pin 1-2, side fields active when contact closed (<24x24cm), center field only when opened.
With GALILEO or NICOL collimator via Bucky controller with CAN.</td></tr>
<tr><td>* Cone density correction:</td><td>no function</td></tr>
<tr><td>Dose measurement input:</td><td>Measuring chamber respectively at input EZX 21, 22, 31, 32, 41
none = No measuring chamber assigned.
For free cassette or tomography without TDC.</td></tr>
</table>

1) For this function the WA option is required.
Ignore for RGDV with CAN: BuckyDiagnost TH/TH2, Thoravision, DigitalDiagnost.

2) All RGDV with CAN: BuckyDiagnost TH/TH2, Thoravision, DigitalDiagnost.

Data set A continued:

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Dose measurement sensor type:

Bucky AMPLIMAT: Input via EZX21/22/31/32/41, measuring field selection on control desk possible.

* Scopo amplimat: *no function*

Photo sensor / AMPLIMAT input: Photo sensor input via EZX21/22/31/32/41.

Exposure series / Tomo movement:

NO	=	Instant brake after exposure end.
NO	=	To be programmed for tomo systems via system CAN. BuckyDiagnost TH/TH2, DigitalDiagnost,
YES	=	More than one exposure possible with one PREP. For tomo units released by 1WA/2WA, PREP must be kept active at the release decade to get the tomo stand back to the start position.

Release delay (automatic techniques):

enable	=	Must be enabled for all AEC techniques. Automatically disabled if non AEC techniques selected.
disable	=	Not to be programmed. Keep release delay always on enable.

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Data set A continued:

Mounted radiographical controller:

none	=	Must be programmed if any release circuit adaptation unit 1WA, 2WA is assigned to this RGDV. No CAN controlled system is assigned to this RGDV.
Bucky controller 1 / DigitalDiagnost	=	CAN controlled system - BuckyDiagnost TH/TH2, DigitalDiagnost RGDV1 ... 4 only
Bucky controller 2	=	No function yet.
Thoravision	=	Can controlled system - Thoravision RGDV1 only

Release circuit adaptation unit:	Assignment of the release unit 1WA, 2WA		
	none	=	free cassette or in case of a CAN driven examination unit
Mounted tomo extension:	none	=	no tomo unit installed
	1WA	=	(1)WAX21 valid as tomography time input
	2WA	=	2WAX21 valid as tomography time input

* Medium II format kV corr. (dose equiv. steps):	Range = 0...8 dose equiv. + kV correction steps
* Medium II format density corr. (-6% steps):	Range = 0...8 -6% density steps
* Medium II format mAs corr. (-6% steps):	Range = 0...8 -6% mAs steps
* Small II format kV corr. (dose equiv. steps):	Range = 0...8 dose equiv. kV reduction steps
* Small II format density corr. (-6% steps):	Range = 0...8 -6% density steps
* Small II format mAs corr. (-6% steps):	Range = 0...8 -6% mAs steps

An RGDV must not be assigned to a "mounted radiographical controller" and a "release circuit adaptation unit" together.

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Data Set B (underlined items = default)			
Used for tomo:	NO YES	=	With YES a definition of the tomography time is expected from the examination unit, e.g. via WAX21 or from a Bucky controller with tomo.
* Used for fluoroscopy:	NO YES	= =	Ok Fluoro unit
* CT add on:	NO	=	Ok (No function available yet)
Disable time override:	NO YES	=	Disables time override function at desk. Automatically disabled with "Used for tomo = YES".
Tube power factor:			1 ... 100%
kV steps:			Single = kV-grading in steps of 1kV Dose equivalent = 6% kV steps ≙ 25% density steps
mA steps:			step width in 25, 12 or 6%
Time steps:			exposure time step width in 25, 12 or 6%
Density steps:			step width in 25, 12 or 6%
Density correction (6% steps):			−8 ... 0 ... +8 correction steps For correction see chapter 13.
Underexposure display (non-automatic techniques):	YES YES NO	= = =	Underexposure is also indicated with techniques without AMPLIMAT. To be programmed for tomo systems via system CAN: BuckyDiagnost TH/TH2, DigitalDiagnost. Must be set for all non-CAN tomo systems.
Tube overload protection:	ON OFF	= =	Overload protection active (default): red = no PREP possible Exposures are possible irrespective of load status. Must not be programmed.

desk display	tube load
green	100%
green – yellow	100%
yellow	80%
yellow – red	64%
red	0%

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1.2.2. Interface assignment

- Select menu:
  PROGRAM/ REGISTRATION DEVICES/ RGDV INTERFACE ASSIGNMENT/ **BUCKY/TOMO 1WA...2WA**

NOTE

There must be no programming here if the diagnostic unit is connected via the CAN interface: BuckyDiagnost TH/TH2, Thoravision, DigitalDiagnost.

- Assign the format and ready contacts of the decade connector WAX11 or WAX12 to a Bucky or tomography RGDV. Refer to Z1-15.1.

  - Decade Bucky 1 (X11) See following table.
  - Decade Bucky 2 (X12) Program the functions as for the first Bucky decade.
  - Tomo Time 0.1 ... 6000ms for each trajectory.

  One tomography unit can be programmed for each device interface.

Decade Bucky 1 ... 2		
Tomo mode switch:	disable =	Input ”tomo mode” is not activated. Remote changeover Bucky / tomography not possible via the examination unit.
	enable =	Input ”tomo mode” is activated. Remote changeover Bucky / tomography possible. Bucky and tomo RGDV must be defined.
Bucky RGDV - switch related:	none/ RGDV 1 ... 8 The inputs ”format contacts” and ”Bucky ready” are activated. When the tomo mode switch is enabled, this RGDV is activated when the remote tomo mode switch is open.	
Bucky RGDV:	none/RGDV 1 ... 8 The inputs ”format contacts” and ”Bucky ready” can be assigned to any RGDV button. The inputs ”format contacts” and ”tomo ready” are activated.	
Tomo RGDV - switch related:	none/ RGDV 1 ... 8 When the tomo mode switch is enabled, this RGDV is activated when the remote tomo mode switch is closed.	

- RESET the generator.
- Fill in the program settings in table “RGDV programming” 2Z-2.0 at the end of this modul.

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1.2.3. Examples for RGDV programming

Example No.	System	Refer drawing
1	- BuckyDiagnost TH with Bucky controller - Diagnost 76: Exposure Scopo / BV-DSI	2Z-2.2
2	- HDH with / without tomo time input - Bucky wall stand - Free cassette	2Z-2.4
3	- BuckyDiagnost TH/TH2, Digital Diagnost with Bucky controller and CAN interface - Bucky wall stand - Free cassette	2Z-2.5
4	- BuckyDiagnost TS - Bucky wall stand - Free cassette	2Z-2.6
5	- Bucky TH any version with Bucky controller - Generator equipped with or without decade adaptation unit WA - Auxiliary for MCS (only) = RGDV4 in combination with free cassette	2Z-2.8
6	- Bucky TH any version - Generator equipped with or without decade adaptation unit WA - Auxiliary for MCS (only) = RGDV5 ... 8	2Z-2.9
7	- Bucky TH any version - Generator equipped with or without decade adaptation unit WA - Auxiliary for Trauma Diagnost (only) = RGDV5 ... 8 - Auxiliaries RGDV1 ... 4 must not be used with a Bucky TH system via CAN	2Z-2.10

■

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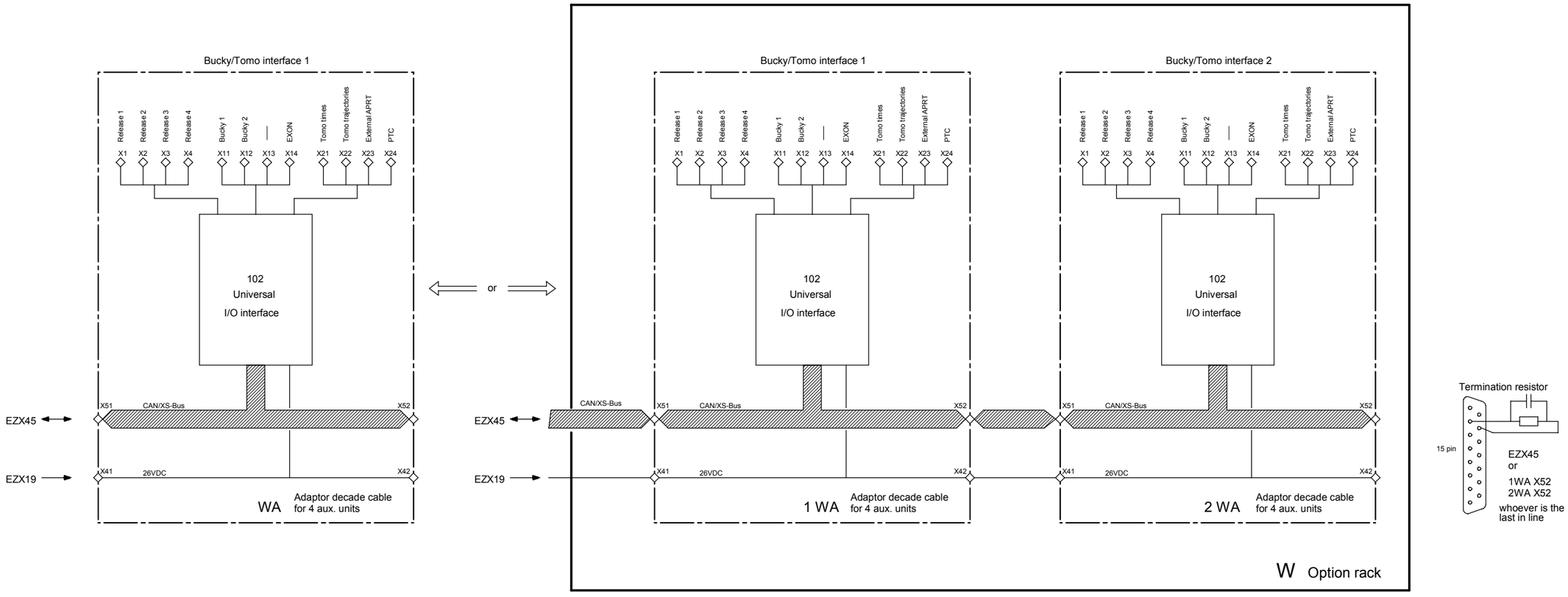
Function unit ADAP _a

Function unit ADAP a_

Function unit ADAP b_



A1/A3 02-03-19 Schr./K0

Block diagram
Expansions

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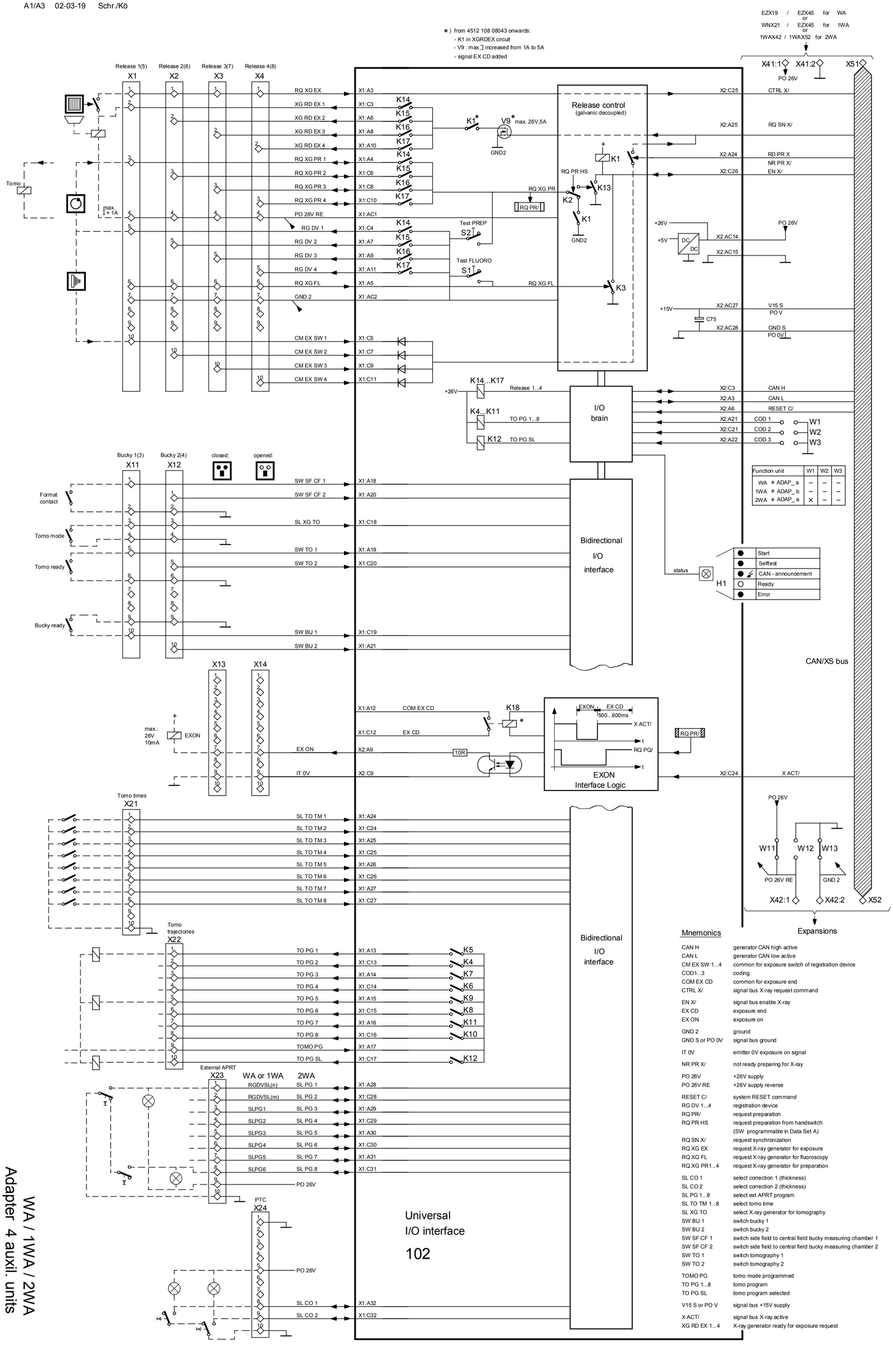

WA / 1WA / 2WA
Adapter 4 auxil. units

Z1-15.1

4512-983-05591_010

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RGDV programming

2Z-2.0

- Name : -								
Data Set A : Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV5	RGDV6	RGDV7	RGDV8
- Room :								
- Tube :								
- Release circuit number :								
- Enable handswitch at generator desk :								
- Syncmaster present :								
- Exposure switch type :								
- Bucky format density correction :								
- Cone density correction :								
- Dose measurement input :								
- Dose measurement sensor :								
- Exposure series/Tomo movement (No break after exposure end):								
- Release delay :								
- Mounted radiographical controller :								
- Release circuit adaptation unit :								
- Mounted tomo extension :								
- Medium II format kV correction (dose equiv. steps) :								
- Medium II format density correction (6% steps) :								
- Medium II format mAs correction (6% steps) :								
- Small II format kV correction (dose equiv. steps) :								
- Small II format density correction (6% steps) :								
- Small II format mAs correction (6% steps) :								
Data Set B :								
- Used for tomo :								
- Used for fluoroscopy :								
- CT add on :								
- Disable time override :								
- Tube power factor :								
- kV steps :								
- mAs steps :								
- mA steps :								
- time steps :								
- Density steps :								
- Density correction (6% steps) :								
- Underexposure display :								
- Tube overload protection :								

Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :		**Bucky / Tomo 1WA : Decade Bucky 1/2**	**WAX11**	**WAX12**	**Bucky / Tomo 1WA \ Tomo time [s] :**			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] RGDV5 [ ] RGDV6 [ ] RGDV7 [ ] RGDV8 [ ]	Tomo mode switch			Tomo time 1 :		Tomo time 5 :	
		Bucky RGDV - switch related			Tomo time 2 :		Tomo time 6 :	
		Bucky RGDV			Tomo time 3 :		Tomo time 7 :	
		Bucky RGDV			Tomo time 4 :		Tomo time 8 :	
		Tomo RGDV - switch related			Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

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- *Bucky Diagnost TH with Bucky-Controller* - *D76 : Exposure Scopo / BV-DSI*	*Name :*	Bucky	Tomo	Bucky wall stand	Free cassette	D 76 Scopo	D 76 BV - DSI		
Data Set A :	Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV5	RGDV6	RGDV7	RGDV8
- Room :		1	1	1	1	1	1		
- Tube :		1	1	1	1	2	2		
- Release circuit number :		do not care	do not care	do not care	do not care	1	2		
- Enable handswitch at generator desk :		yes	yes	yes	yes	no	no		
- Syncmaster present :		yes	yes	yes	yes	yes	yes		
- Exposure switch type :		double step	double step	double step	double step	double step	double step		
- Bucky format density correction :		0	0	0	0	0	0		
- Cone density correction :		0	0	0	0	0	0		
- Dose measurement input :		EZ X21	none / [EZ X21]	EZ X31	none	EZ X22	EZ X41		
- Dose measurement sensor :		Bucky amplimat	Bucky amplimat	Bucky amplimat	(Bucky amplimat)	Scopo amplimat	photo sensor / amplimat input		
- Exposure series/Tomo movement :		no	no	no	no	yes	yes		
- Release delay :		enable	enable	enable	enable	enable	enable		
- Mounted radiographical controller :		Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	none	none		
- Release circuit adaptation unit :		none	none	none	none	1WB	1WB		
- Mounted tomo extension :		none	none	none	none	none	none		
- Medium II format kV correction (dose equiv. steps) :		0	0	0	0	0	0 [1)]		
- Medium II format density correction (6% steps) :		0	0	0	0	0	0 [1)]		
- Medium II format mAs correction (6% steps) :		0	0	0	0	0	0 [1)]		
- Small II format kV correction (dose equiv. steps) :		0	0	0	0	0	0 [1)]		
- Small II format density correction (6% steps) :		0	0	0	0	0	0 [1)]		
- Small II format mAs correction (6% steps) :		0	0	0	0	0	0 [1)]		
Data Set B :									
- Used for tomo :		no	yes	no	no	no	no		
- Used for fluoroscopy :		no	no	no	no	yes	yes		
- CT add on :		no	no	no	no	no	no		
- Disable time override :		no	no	no	no	no	no		
- Tube power factor :		100 %	100 %	100 %	100 %	100 %	100 %		
- kV steps :		Dose equiv. [1)]	Dose equiv. [1)]	Dose equiv. [1)]	Dose equiv. [1)]	Dose equiv. [1)]	Dose equiv. [1)]		
- mAs steps :		25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]		
- mA steps :		25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]		
- time steps :		25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]		
- Density steps :		12 % [1)]	12 % [1)]	12 % [1)]	12 %	12 % [1)]	12 %		
- Density correction (6% steps) :		0	0	0	0	0	0		
- Underexposure display :		yes	yes	yes	yes	yes	yes		
- Tube overload protection :		on	on	on	on	on	on		

Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :		~~**Bucky / Tomo 1WA : Decade Bucky 1/2**~~	~~**WAX11**~~	~~**WAX12**~~	~~**Bucky / Tomo 1WA \ Tomo time [s] :**~~			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] RGDV5 [x] RGDV6 [x] RGDV7 [ ] RGDV8 [ ]	Tomo mode switch	----	----	Tomo time 1 :	----	Tomo time 5:	----
		Bucky RGDV - switch related	----	----	Tomo time 2 :	----	Tomo time 6 :	----
		Bucky RGDV	----	----	Tomo time 3 :	----	Tomo time 7 :	----
		Bucky RGDV	----	----	Tomo time 4 :	----	Tomo time 8 :	----
		Tomo RGDV - switch related	----	----	Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

1) = has to be adjustet on site

[ ] = TDC

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(a/01.0)

RGDV programming: example 2

2Z-2.2

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HDH : *without / [with tomo time input]* ***Name :***	Bucky	Tomo	Bucky wall stand	Free cassette	Free cassette USA			
Data Set A : Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV4	RGDV6	RGDV7	RGDV8
- Room :	1	1	1	1	1			
- Tube :	1	1	1	1	1			
- Release circuit number :	1	1	3	(4)	4			
- Enable handswitch at generator desk :	yes	yes	yes	yes	yes			
- Syncmaster present :	yes	yes	yes	no	yes			
- Exposure switch type :	double step	double step	double step	double step	double step			
- Bucky format density correction :	0	0	0	0	0			
- Cone density correction :	0	0	0	0	0			
- Dose measurement input :	EZ X21	none / [EZ X21]	EZ X31	none	none			
- Dose measurement sensor :	Bucky amplimat	Bucky amplimat	Bucky amplimat	(Bucky amplimat)	(Bucky amplimat)			
- Exposure series / Tomo movement :	no	yes	no	no	no			
- Release delay :	enable	enable	enable	enable	enable			
- Mounted radiographical controller :	none	none	none	none	none			
- Release circuit adaptation unit :	1WA	1WA	1WA	none	1WA			
- Mounted tomo extension :	none	none (1WA)	none	none	none			
- Medium II format kV correction (dose equiv. steps) :	0	0	0	0	0			
- Medium II format density correction (6% steps) :	0	0	0	0	0			
- Medium II format mAs correction (6% steps) :	0	0	0	0	0			
- Small II format kV correction (dose equiv. steps) :	0	0	0	0	0			
- Small II format density correction (6% steps) :	0	0	0	0	0			
- Small II format mAs correction (6% steps) :	0	0	0	0	0			
Data Set B :								
- Used for tomo :	no	no (yes)	no	no	no			
- Used for fluoroscopy :	no	no	no	no	no			
- CT add on :	no	no	no	no	no			
- Disable time override :	no	no	no	no	no			
- Tube power factor :	100 %	100 %	100 %	100 %	100 %			
- kV steps :	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)			
- mAs steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)	25 % 1)			
- mA steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)	25 % 1)			
- time steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)	25 % 1)			
- Density steps :	12 % 1)	12 % 1)	12 % 1)	12 %	12 %			
- Density correction (6% steps) :	0	0	0	0	0			
- Underexposure display :	yes	no	yes	yes	yes			
- Tube overload protection :	on	on	on	on	on			

~~**Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :**~~		**Bucky / Tomo 1WA : Decade Bucky 1/2**	**WAX11**	**WAX12**	**Bucky / Tomo 1WA \ Tomo time [s] :**			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] ~~RGDV5 [ ] RGDV6 [ ] RGDV7 [ ] RGDV8 [ ]~~	Tomo mode switch	dis(en)able	disable	Tomo time 1 :	0,8	Tomo time 5 :	0,1
		Bucky RGDV - switch related	RGDV 1	none	Tomo time 2 :	3,2	Tomo time 6 :	0,1
		Bucky RGDV	RGDV 3	none	Tomo time 3 :	0,8	Tomo time 7 :	0,1
		Bucky RGDV	none	none	Tomo time 4 :	3,2	Tomo time 8 :	0,1
		Tomo RGDV - switch related	RGDV 2	none	Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

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[ ] = TDC

RGDV programming: example 4

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BuckyDIAGNOST with Bucky-Controller TH / TH2 / DigitalDiagnost ***Name :***	Bucky	Tomo	Bucky wall stand	Free cassette				
Data Set A : Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV5	RGDV6	RGDV7	RGDV8
- Room :	1	1	1	1				
- Tube :	1	1	1	1				
- Release circuit number :	do not care	do not care	do not care	do not care				
- Enable handswitch at generator desk :	yes	yes	yes	yes				
- Syncmaster present :	yes	yes	yes	yes				
- Exposure switch type :	double step	double step	double step	double step				
- Bucky format density correction :	0	0	0	0				
- Cone density correction :	0	0	0	0				
- Dose measurement input :	EZ X21	none / [EZ X21]	EZ X31	none				
- Dose measurement sensor :	Bucky amplimat	Bucky amplimat	Bucky amplimat	(Bucky amplimat)				
- Exposure series / Tomo movement :	no	no	no	no				
- Release delay :	enable	enable	enable	enable				
- Mounted radiographical controller :	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost				
- Release circuit adaptation unit :	none	none	none	none				
- Mounted tomo extension :	none	none	none	none				
- Medium II format kV correction (dose equiv. steps) :	0	0	0	0				
- Medium II format density correction (6% steps) :	0	0	0	0				
- Medium II format mAs correction (6% steps) :	0	0	0	0				
- Small II format kV correction (dose equiv. steps) :	0	0	0	0				
- Small II format density correction (6% steps) :	0	0	0	0				
- Small II format mAs correction (6% steps) :	0	0	0	0				
Data Set B :								
- Used for tomo :	no	yes	no	no				
- Used for fluoroscopy :	no	no	no	no				
- CT add on :	no	no	no	no				
- Disable time override :	no	no	no	no				
- Tube power factor :	100 %	100 %	100 %	100 %				
- kV steps :	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)				
- mAs steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				
- mA steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				
- time steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				
- Density steps :	12 % 1)	12 % 1)	12 % 1)	12 %				
- Density correction (6% steps) :	0	0	0	0				
- Underexposure display :	yes	yes	yes	yes				
- Tube overload protection :	on	on	on	on				

~~Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :~~		~~Bucky / Tomo 1WA : Decade Bucky 1/2~~	~~WAX11~~	~~WAX12~~	~~Bucky / Tomo time~~			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] RGDV5 [ ] RGDV6 [ ] RGDV7 [ ] RGDV8 [ ]	Tomo mode switch	----	----	Tomo time 1 :	----	Tomo time 5:	----
		Bucky RGDV - switch related	----	----	Tomo time 2 :	----	Tomo time 6 :	----
		Bucky RGDV	----	----	Tomo time 3 :	----	Tomo time 7 :	----
		Bucky RGDV	----	----	Tomo time 4 :	----	Tomo time 8 :	----
		Tomo RGDV - switch related	----	----	Time setting for input at WA X21:1 8			
For WBX11 : 9 - -10 (ready) und 1- -2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 - -> Bucky - Tomo remote switchover RGDVs*						

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RGDV programming: example 5

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BuckyDIAGNOST TS	***Name :***	Bucky	Tomo	Bucky wall stand	Free cassette				
Data Set A :	Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV5	RGDV6	RGDV7	RGDV8
- Room :		1	1	1	1				
- Tube :		1	1	1	1				
- Release circuit number :		1	1	2	(1)				
- Enable handswitch at generator desk :		yes	yes	yes	yes				
- Syncmaster present :		yes	yes	yes	no				
- Exposure switch type :		double step	double step	double step	double step				
- Bucky format density correction :		0	0	0	0				
- Cone density correction :		0	0	0	0				
- Dose measurement input :		EZ X21	none / [EZX21]	EZ X31	none				
- Dose measurement sensor :		Bucky amplimat	Bucky amplimat	Bucky amplimat	Bucky amplimat				
- Exposure series / Tomo movement :		no	yes	no	no				
- Release delay :		enable	enable	enable	enable				
- Mounted radiographical controller :		none	none	none	none				
- Release circuit adaptation unit :		1WA	1WA	1WA	none				
- Mounted tomo extension :		none	1WA	none	none				
- Medium II format kV correction (dose equiv. steps) :		0	0	0	0				
- Medium II format density correction (6% steps) :		0	0	0	0				
- Medium II format mAs correction (6% steps) :		0	0	0	0				
- Small II format kV correction (dose equiv. steps) :		0	0	0	0				
- Small II format density correction (6% steps) :		0	0	0	0				
- Small II format mAs correction (6% steps) :		0	0	0	0				
Data Set B :									
- Used for tomo :		no	yes	no	no				
- Used for fluoroscopy :		no	no	no	no				
- CT add on :		no	no	no	no				
- Disable time override :		no	no	no	no				
- Tube power factor :		100 %	100 %	100 %	100 %				
- kV steps :		Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose eqiv. 1)				
- mAs steps :		25 % 1)	25 % 1)	25 % 1)	25 % 1)				
- mA steps :		25 % 1)	25 % 1)	25 % 1)	25 % 1)				
- time steps :		25 % 1)	25 % 1)	25 % 1)	25 % 1)				
- Density steps :		12 % 1)	12 % 1)	12 % 1)	12 %				
- Density correction (6% steps) :		0	0	0	0				
- Underexposure display :		yes	no	yes	yes				
- Tube overload protection :		on	on	on	on				

~~**Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :**~~		**Bucky / Tomo 1WA : Decade Bucky 1/2**	**WAX11**	**WAX12**	**~~Bucky / Tomo time~~**			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] ~~RGDV5~~ [ ] ~~RGDV6~~ [ ] ~~RGDV7~~ [ ] ~~RGDV8~~ [ ]	Tomo mode switch	enable	----	Tomo time 1 :	----	Tomo time 5:	----
		Bucky RGDV - switch related	RGDV1	----	Tomo time 2 :	----	Tomo time 6 :	----
		Bucky RGDV	none	----	Tomo time 3 :	----	Tomo time 7 :	----
		Bucky RGDV	none	----	Tomo time 4 :	----	Tomo time 8 :	----
		Tomo RGDV - switch related	RGDV2	----	Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

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RGDV programming: example 6

4512 983 05651

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4512-983-05671_2Z-2_8_010

BuckyDIAGNOST TH any version with Bucky-Controller Generotor equipped with / without decade adapt. unit WA Aux. for MCS (only) = RGDV4 combined with free cassette ***Name :***	Bucky	Tomo	Bucky wall stand	Free cassette	MCS			
Data Set A : Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV4	RGDV6	RGDV7	RGDV8
- Room :	1	1	1	1	1			
- Tube :	1	1	1	1	1			
- Release circuit number :	1	1	1	1	1			
- Enable handswitch at generator desk :	yes	yes	yes	yes	yes			
- Syncmaster present :	yes	yes	yes	yes	yes			
- Exposure switch type :	double step	double step	double step	double step	double step			
- Bucky format density correction :	0	0	0	0	0			
- Cone density correction :	0	0	0	0	0			
- Dose measurement input :	EZ X21	none / [EZ X21]	EZ X31	none	EZ X22			
- Dose measurement sensor :	Bucky amplimat	Bucky amplimat	Bucky amplimat	(Bucky amplimat)	Bucky amplimat			
- Exposure series / Tomo movement :	no	no	no	no	no			
- Release delay :	enable	enable	enable	enable	enable			
- Mounted radiographical controller :	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost			
- Release circuit adaptation unit :	none	none	none	none	none			
- Mounted tomo extension :	none	none	none	none	none			
- Medium II format kV correction (dose equiv. steps) :	0	0	0	0	0			
- Medium II format density correction (6% steps) :	0	0	0	0	0			
- Medium II format mAs correction (6% steps) :	0	0	0	0	0			
- Small II format kV correction (dose equiv. steps) :	0	0	0	0	0			
- Small II format density correction (6% steps) :	0	0	0	0	0			
- Small II format mAs correction (6% steps) :	0	0	0	0	0			
Data Set B :								
- Used for tomo :	no	yes	no	no	no			
- Used for fluoroscopy :	no	no	no	no	no			
- CT add on :	no	no	no	no	no			
- Disable time override :	no	no	no	no	no			
- Tube power factor :	100 %	100 %	100 %	100 %	100 %			
- kV steps :	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)			
- mAs steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)	25 % 1)			
- mA steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)	25 % 1)			
- time steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)	25 % 1)			
- Density steps :	12 % 1)	12 % 1)	12 % 1)	12 %	12 % 1)			
- Density correction (6% steps) :	0	0	0	0	0			
- Underexposure display :	yes	yes	yes	yes	yes			
- Tube overload protection :	on	on	on	on	on			

~~**Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :**~~		~~**Bucky / Tomo 1WA : Decade Bucky 1/2**~~	~~**WAX11**~~	~~**WAX12**~~	~~**Bucky / Tomo time**~~			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] RGDV5 [ ] RGDV6 [ ] RGDV7 [ ] RGDV8 [ ]	Tomo mode switch	----	----	Tomo time 1 :	----	Tomo time 5:	----
		Bucky RGDV - switch related	----	----	Tomo time 2 :	----	Tomo time 6 :	----
		Bucky RGDV	----	----	Tomo time 3 :	----	Tomo time 7 :	----
		Bucky RGDV	----	----	Tomo time 4 :	----	Tomo time 8 :	----
		Tomo RGDV - switch related	----	----	Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

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RGDV programming: example 8

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RGDV programming: example 9

2Z-2.9

BuckyDIAGNOST TH any version ***Name :*** ***Generotor equipped with / without decade adapt. unit WA*** ***Aux. for MCS (only) = any of RGDV5 ... 8***	Bucky	Tomo	Bucky wall stand	Free cassette				MCS
Data Set A : Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV5	RGDV6	RGDV7	RGDV8
- Room :	1	1	1	1				1
- Tube :	1	1	1	1				1
- Release circuit number :	1	1	1	1				1
- Enable handswitch at generator desk :	yes	yes	yes	yes				yes
- Syncmaster present :	yes	yes	yes	yes				no
- Exposure switch type :	double step	double step	double step	double step				double step
- Bucky format density correction :	0	0	0	0				0
- Cone density correction :	0	0	0	0				0
- Dose measurement input :	EZ X21	none / [EZ X21]	EZ X31	none				EZ X22
- Dose measurement sensor :	Bucky amplimat	Bucky amplimat	Bucky amplimat	(Bucky amplimat)				Bucky amplimat
- Exposure series / Tomo movement :	no	no	no	no				no
- Release delay :	enable	enable	enable	enable				enable
- Mounted radiographical controller :	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost				none
- Release circuit adaptation unit :	none	none	none	none				none
- Mounted tomo extension :	none	none	none	none				none
- Medium II format kV correction (dose equiv. steps) :	0	0	0	0				0
- Medium II format density correction (6% steps) :	0	0	0	0				0
- Medium II format mAs correction (6% steps) :	0	0	0	0				0
- Small II format kV correction (dose equiv. steps) :	0	0	0	0				0
- Small II format density correction (6% steps) :	0	0	0	0				0
- Small II format mAs correction (6% steps) :	0	0	0	0				0
Data Set B :								
- Used for tomo :	no	yes	no	no				no
- Used for fluoroscopy :	no	no	no	no				no
- CT add on :	no	no	no	no				no
- Disable time override :	no	no	no	no				no
- Tube power factor :	100 %	100 %	100 %	100 %				100 %
- kV steps :	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)				Dose equiv. 1)
- mAs steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				25 % 1)
- mA steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				25 % 1)
- time steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				25 % 1)
- Density steps :	12 % 1)	12 % 1)	12 % 1)	12 %				12 % 1)
- Density correction (6% steps) :	0	0	0	0				0
- Underexposure display :	yes	yes	yes	yes				yes
- Tube overload protection :	on	on	on	on				on

~~Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :~~		~~Bucky / Tomo 1WA : Decade Bucky 1/2~~	~~WAX11~~	~~WAX12~~	~~Bucky / Tomo time~~			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] ~~RGDV5 [ ] RGDV6 [ ] RGDV7 [ ]~~ RGDV8 [ ]	Tomo mode switch	----	----	Tomo time 1 :	----	Tomo time 5:	----
		Bucky RGDV - switch related	----	----	Tomo time 2 :	----	Tomo time 6 :	----
		Bucky RGDV	----	----	Tomo time 3 :	----	Tomo time 7 :	----
		Bucky RGDV	----	----	Tomo time 4 :	----	Tomo time 8 :	----
		Tomo RGDV - switch related	----	----	Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

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RGDV programming: example 10

2Z-2.10

BuckyDIAGNOST TH any version ***Name :*** ***Generotor equipped with / without decade adapt. unit WA*** ***Aux. for TraumaDiagnost (only) = any of RGDV5 ... 8*** ***Aux. RGDV1 ... 4 must not be used with a Bucky TH stystem via CAN***	Bucky	Tomo	Bucky wall stand	Free cassette				Trauma
Data Set A : Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV5	RGDV6	RGDV7	RGDV8
- Room :	1	1	1	1				1
- Tube :	1	1	1	1				2
- Release circuit number :	1	1	1	1				1
- Enable handswitch at generator desk :	yes	yes	yes	yes				yes
- Syncmaster present :	yes	yes	yes	yes				no
- Exposure switch type :	double step	double step	double step	double step				double step
- Bucky format density correction :	0	0	0	0				0
- Cone density correction :	0	0	0	0				0
- Dose measurement input :	EZ X21	none / [EZ X21]	EZ X31	none				EZ X22
- Dose measurement sensor :	Bucky amplimat	Bucky amplimat	Bucky amplimat	(Bucky amplimat)				Scopo amplimat
- Exposure series / Tomo movement :	no	no	no	no				no
- Release delay :	enable	enable	enable	enable				enable
- Mounted radiographical controller :	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost				none
- Release circuit adaptation unit :	none	none	none	none				none
- Mounted tomo extension :	none	none	none	none				none
- Medium II format kV correction (dose equiv. steps) :	0	0	0	0				0
- Medium II format density correction (6% steps) :	0	0	0	0				0
- Medium II format mAs correction (6% steps) :	0	0	0	0				0
- Small II format kV correction (dose equiv. steps) :	0	0	0	0				0
- Small II format density correction (6% steps) :	0	0	0	0				0
- Small II format mAs correction (6% steps) :	0	0	0	0				0
Data Set B :								
- Used for tomo :	no	yes	no	no				no
- Used for fluoroscopy :	no	no	no	no				yes
- CT add on :	no	no	no	no				no
- Disable time override :	no	no	no	no				no
- Tube power factor :	100 %	100 %	100 %	100 %				100 %
- kV steps :	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)				Dose equiv. 1)
- mAs steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				25 % 1)
- mA steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				25 % 1)
- time steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				25 % 1)
- Density steps :	12 % 1)	12 % 1)	12 % 1)	12 %				12 % 1)
- Density correction (6% steps) :	0	0	0	0				0
- Underexposure display :	yes	yes	yes	yes				yes
- Tube overload protection :	on	on	on	on				on

~~Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :~~		~~Bucky / Tomo 1WA : Decade Bucky 1/2~~	~~WAX11~~	~~WAX12~~	~~Bucky / Tomo time~~			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] RGDV5 [ ] RGDV6 [ ] RGDV7 [ ] RGDV8 [ ]	Tomo mode switch	----	----	Tomo time 1 :	----	Tomo time 5:	----
		Bucky RGDV - switch related	----	----	Tomo time 2 :	----	Tomo time 6 :	----
		Bucky RGDV	----	----	Tomo time 3 :	----	Tomo time 7 :	----
		Bucky RGDV	----	----	Tomo time 4 :	----	Tomo time 8 :	----
		Tomo RGDV - switch related	----	----	Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

1) = has to be adjustet on site

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Z1-15.1	(97.0)	A1/A3	4512 983 05571	2Z-2.8	(01.0)	A4	4512 983 05671
Z2-15.1	(97.0)	A3/A3	4512 983 05741	2Z-2.9	(01.0)	A4	4512 983 05681
2Z-2.0	01.0)	A4	4512 983 05591	2Z-2.10	(01.0)	A4	4512 983 05691
2Z-2.2	(a/01.0)	A4	4512 983 05611	2Z-3	(97.0)	A3	4512 983 05721
2Z-2.4	(a/01.0)	A4	4512 983 05631	2Z-4	(97.0)	A4	4512 983 05771
2Z-2.5	(a/01.0)	A4	4512 983 05641	2Z-5	(97.0)	A4	4512 983 05731
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Configuration part 2

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1.3. Tube adjustment

1.3.1. Tube conditioning

WARNING

Radiation is released during the conditioning procedure!

1.3.1.1. Preconditions / Programmings

- Switch OFF the generator.

Preparation of generators which are connected via a CAN interface:

- BuckyDiagnost TH and TH2
- DigitalDiagnost
- Thoravision

- Disconnect the following plugs:

System	Connector		
	EZX23 signal bus	EZX42 or EZX42-1 system CAN	EZX43 or EZX43-1 system CAN
BukyDiagnost TH / TH2	X		X
DigitalDiagnost	X	X	X
Thoravision	X	X	X

- Switch ON the generator.

NOTE

The programming procedure must not be started before relay ENK1 has been energized at least 2 minutes after the generator has been switched ON.

- Perform the following programmings temporarily for each tube connected to one of the assigned RGDV = Free cassette
  Select menu XRGSCOPE:
  PROGRAM/ REGISTRATION DEVICES/ RGDV#/ **DATA SET A**

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Programming	Temporarily	Original Tube
Enable handswitch	YES	Verify the customized entries in 2Z-2.x
Syncmaster present	NO	
Exposure switch type	Double Step	
Exposure series / Tomo	YES	
Mounted radiographic	NONE	

- RESET the generator.
- Select appropriate programmed RGDV = “Free cassette” for the tube to be conditioned.

1.3.1.2. Procedure

- Select **large** focus only.

NOTE

The generator must be in the READY *state.*

- Run reconditioning procedure for an adapted tube, refer to following table, left column TUBE ADAPTED.

or

- Run conditioning procedure for a new or non-adapted tube, refer to following table right column TUBE NOT ADAPTED.
- It is recommended that the high tension be monitored during conditioning.
  Connect the scope:
  Channel1: kV AV HT at EZ130 X3 (1V/div), scale: 20kV/V
  Trigger external: CTRL_X_C/ at backpanel EZ X74, negative slope
  Time base: 2ms/div
- In case of problems like tube arcing see the following flowchart EXPOSURE SEQUENCE as an example.
  The flowchart applies for applicable kV range only, e. g.:
  109kV is the max. kV value for normal application, perform just up to next higher kV step = 117kV.

NOTE

Refer to flowchart EXPOSURE SEQUENCE.

If the tube arcs at a certain kV value, switch another 3 exposures with same parameters and 10s pause between subsequent exposures. In case of success (no arcing anymore) continue with next kV step of the following table.

If the last exposure still arcs go one kV step back and follow normal procedure. If this routine has been performed three times without improvement: ==> **Replace the tube!**

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Exposure parameters for conditioning					
Tube adapted			# exposures	Tube not adapted	
kV	mA	ms		kV	mAs
80	10	50	< 1 >	80	0.5
80	10	500	< 1 >	80	5
80	200	250	< 1 >	80	50
10 seconds pause				10 seconds pause	
80	max. mA	100	< 1 >	80	100
1 minute pause				1 minute pause	
90	10	50	< 1 >	90	0.5
90	10	500	< 1 >	90	5
90	200	250	< 1 >	90	50
10 seconds pause				10 seconds pause	
90	max. mA	100	< 1 >	90	100
1 minute pause				1 minute pause	
100	10	50	< 1 >	100	0.5
100	10	500	< 1 >	100	5
100	200	250	< 1 >	100	50
10 seconds pause				10 seconds pause	
100	max. mA	100	< 1 >	100	100
1 minute pause				1 minute pause	
110	10	50	< 1 >	110	0.5
110	10	500	< 1 >	110	5
110	200	250	< 1 >	110	50
10 seconds pause				10 seconds pause	
110	max. mA	100	< 1 >	110	100
1 minute pause				1 minute pause	
120	10	50	< 1 >	120	0.5
120	10	500	< 1 >	120	5
120	200	250	< 1 >	120	50
10 seconds pause				10 seconds pause	
120	max. mA	100	< 1 >	120	100
1 minute pause				1 minute pause	
130	10	50	< 1 >	130	0.5
130	10	500	< 1 >	130	5
130	200	250	< 1 >	130	50
10 seconds pause				10 seconds pause	
130	max. mA	100	< 1 >	130	100
1 minute pause				1 minute pause	

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Exposure parameters for conditioning					
Tube adapted			# exposures	Tube not adapted	
kV	mA	ms		kV	mAs
140	10	50	< 1 >	140	0.5
140	10	500	< 1 >	140	5
140	200	250	< 1 >	140	50
10 seconds pause				10 seconds pause	
140	max. mA	100	< 1 >	140	100
1 minute pause				1 minute pause	
145	10	50	< 1 >	145	0.5
145	10	500	< 1 >	145	5
145	200	250	< 1 >	145	50
10 seconds pause				10 seconds pause	
145	max. mA	100	< 1 >	145	100
1 minute pause				1 minute pause	
148	10	50	< 1 >	148	0.5
148	10	500	< 1 >	148	5
148	200	250	< 1 >	148	50
10 seconds pause				10 seconds pause	
148	max. mA	100	< 1 >	148	100
1 minute pause				1 minute pause	
150	10	50	< 1 >	150	0.5
150	10	500	< 1 >	150	5
150	200	250	< 1 >	150	50
10 seconds pause				10 seconds pause	
150	max. mA	100	< 1 >	150	100
1 minute pause				1 minute pause	

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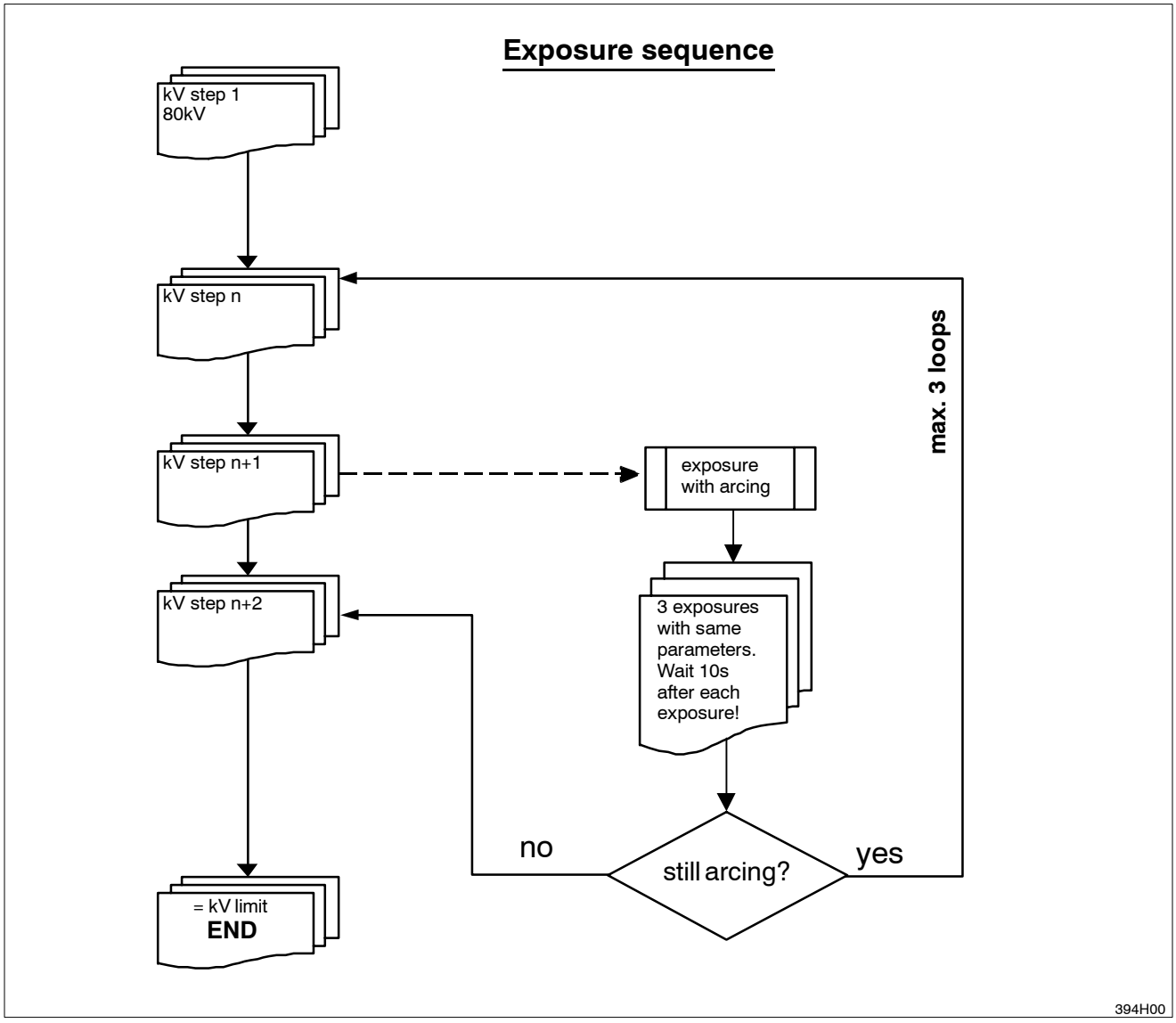

NOTE

If a tube arcs at any kV value which is not required for application the max. kV (e.g.117kV) program this new limit value by XRGSCOPE:

PROGRAM/ TUBES/ TUBE LIMITS/ MAX. TUBE VOLTAGE LIMIT [kV]/ **[117]**

As the limit value decreases for this reason, a following re-adaptation procedure sets the field ADAPTED TO [kV] to this value as well.

- Set RGDV programming to original status if no adaptation procedure has to be executed.
- RESET the generator.

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1.3.2. Tube adaptation

⚠ WARNING

Radiation is released during the adaptation procedure!

1.3.2.1. General information

Tube adaptation is an automatic process which includes:

1. The measurement of the mA offset value that is caused by:
   - the kV measuring circuit
   - the emission current feedback circuit (VCO)

2. The measurement of the individual standby filament current (based on 100μA).

3. The emission current characteristic as f (kV, filament current).

4. The dynamic behavior (positive and negative boost adaptation) where the inertia of the filament with respect to heating up and cooling down is registered.
   For more information refer to subsystem manual OPTIMUS RAd section 3: FAULT FINDING.

NOTE

In case of problems check the symptom / solution list at the end of this adjustment chapter. Repeat the adaptation for this particular focus.

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1.3.2.2. Preconditions / Programmings

- Switch OFF the generator.

Preparation of generators which are connected via a CAN interface:

- BuckyDiagnost TH and TH2
- DigitalDiagnost
- Thoravision

- Disconnect the following plugs:

System	Connector		
	EZX23 signal bus	EZX42 or EZX42-1 system CAN	EZX43 or EZX43-1 system CAN
BukyDiagnost TH / TH2	X		X
DigitalDiagnost	X	X	X
Thoravision	X	X	X

- Switch ON the generator.

NOTE

The adaption procedure must not be started before relay ENK1 has been energized at least 2 minutes after the generator has been switched ON.

- The tube must be conditioned as described in chapter 1.3.1 “Tube conditioning”.

- Check the upper kV limit
  Select menu XRGSCOPE:
  PROGRAM/ TUBES/ TUBE LIMITS/ **MAX. TUBE VOLTAGE LIMIT [kV]**

  The programmed value should match the nominal value of the tube connected or in case of older tubes the upper kV limit should be set to the max. application kV.
  Once an adaptation is completed the new limit value indicates as ADAPTED TO [kV].

- Perform the following programmings temporarily for each tube connected to one of the assigned RGDV = Free cassette
  Select menu XRGSCOPE:
  PROGRAM/ REGISTRATION DEVICES/ RGDV#/ **DATA SET A**

Programming	Temporarily	Original Tube
Enable handswitch	YES	Verify the customized entries in 2Z-2.x
Syncmaster present	NO	
Exposure switch type	Double Step	
Exposure series / Tomo	YES	
Mounted radiographic	NONE	

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1.3.2.3. Procedure

- RESET the generator.
- It is recommended that the high tension be monitored during adaptation.
  Connect the scope:
  Channel1: kV AV HT at EZ130 X3 (1V/div), scale: 20kV/V
  Trigger external: CTRL_X_C/ at backpanel EZ X74, negative slope
  Time base: 2ms/div
- Select the RGDV = Free cassette for the tube to be adapted.
- Select menu XRGSCOPE:
  OPTIMUS XRG/ ADJUST/ **TUBE ADAPTATION**
- Select the tube and focus to be adapted, start with small focus!

NOTE

To avoid any malfunction make sure that READY is displayed on the desk before transmitting data by pushing <F2>:
READY state disappears, ADAP is displayed on the desk, WAITING is displayed on the PC screen.
Wait until the generator turns back to READY state.

- Start the adaptation process by pushing the handswitch in PREP and EXP position continuously.

  The generator switches about 125 exposures for each focus. The radiation sign at the desk indicates exposures but there is no beep at the end of each exposure.
  The actual kV parameters are displayed during adaptation.

  The generator carries out the adaptation automatically. The procedure for one focus is completed when the desk indication changes from ADAP to TEST. The WAITING message disappears from the PC screen together with a PC beep, followed by the screen: BEFORE CONTINUING THE GENERATOR MUST BE RESET.
- RESET the generator.
- Run the adaptation for each focus (small and large) and tube.

NOTE

As there is no tube type with a physical third (middle) focus yet, the third focus can not be adapted. VARIOFOCUS values are calculated by adapted small and large focus. APR programs using VARIOFOCUS can only be selected until small and large focus are both adapted.

- Set RGDV(s) programming to original status according to table “RGDV programming” 2Z–2.x in the end of this modul.

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1.3.3. Final tube adjustment work

1. BuckyDiagnost TH with CAN interface, DigitalDiagnost, Thoravision:

   - Switch OFF the generator.
   - Reestablish signal bus connector EZX23.
   - Reestablish CAN connectors EZX42-1 and EZX43-1.
   - Switch ON the generator.

2. All other systems:

   - Reset the generator.

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1.3.4. Problems during adaptation - Symptoms and solutions

1. A warning cannot be displayed on the control desk, the WAITING screen on the PC is flickering instead during this event and logged in the error log index.

2. If the tube has already been at a high temperature level (but the tube load indication still indicates green or green-yellow for 100% power) it might happen that the load indication changes straight to red and the adaptation is on hold**.** WAITING is flickering on the PC.
   Solution: Keep the handswitch pushed, once the temperature is down adaptation continues automatically.

NOTE

An increment of one of the temperature levels inhibits the 100% power condition. This event is always logged as warning 00BV in the error log index.

3. An error message just flashes for a very short moment and is instantly covered by ADAP on the desk afterwards. WAITING is flickering on the PC.

4. All buttons at the control desk including the RESET button are inactive during adaptation.
   The only way to RESET an error is to release the PREP switch which causes an interrupt similar to the RESET command.

5. After letting go of the PREP switch wait until the desk indicates READY. If READY does not appear at least after 20 seconds run a warmstart of the generator by pushing the RESET button on CU EZ139.

6. If adaptation seems to do nothing for more than 30 seconds let go of the PREP switch. Wait until the desk indicates READY. If READY does not appear at least after 20 seconds run a warmstart of the generator by pushing the RESET button on CU EZ139.

7. If a constant READY indication appears for more than 2 seconds while PREP and EXP is activated by the handswitch during adaptation let go of the handswitch.
   Wait until the desk indicates READY. If READY does not appear at least after 20 seconds run a warmstart of the generator by pushing the RESET button on CU EZ139.

8. If adaptation does not carry on with or without READY indication check whether one of the function units indicates a FATAL error by turning on the red LED. Let go of the handswitch and run a warmstart of the generator by pushing the RESET button on CU EZ139.

9. If adaptation has been interrupted by a generator warmstart check the error log index before restarting adaptation:
   kV errors 02WG and/or 02WH indicate tube arcing. Run conditioning of the tube as described in chapter 1.3.1 and/or reduce the max. kV value to the required application value.

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1.4. Dose rate control

1.4.1. AMPLIMAT sensitivity

- Select menu:
  PROGRAM/ DOSE RATE CONTROL AMPLIMAT/ **SENSITIVITY**

- Depending on HW programming of jumper EZ150:W4. W4 programs sensitivity accordingly:

  high = × 4 = EZ150:W4 in position 1
  ===> All screen/film combinations with a system speed > 200.

  low = × 1 = EZ150:W4 in position 3
  ===> At least one screen/film combination with a system speed ≤ 200.

1.4.2. Screen/film combinations

5 screen/film combinations can be programmed for each of the 5 measuring chambers:

- Select menu:
  PROGRAM/ DOSE RATE CONTROL/ AMPLIMAT CHAMBER 1 ... 5/ **DATA SET 1 ... 5**

  The number of the chamber corresponds to the specified unit number of the dose measuring unit.

The choice between automatic and manual DRC processing is possible when an authorized hardware key is inserted in the PC.

Automatic is selected as default and must be used for the initial programming.
Data sets of adjacent rooms can be copied but have to be aligned afterwards.

Access manual DRC processing by pushing the <ESC> key.
The manual mode is suitable for:

- Copying complete programming to other measuring chambers.
- Setting the basic density.
- Changing the desk-displayed names of the programmed screen/film combinations.
- Creating backups of the DRC programmings.

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1.4.2.1. Automatic DRC processing

- Select the desired data from the files offered for the following programming steps.

  The files are part of the installation software.
  - Select the programming field with the cursor and enter <RETURN>.
  - Enter the desired file from the list offered.
  - Select the desired data as required.

FILM	File ”film.tdl”:	Film types according to description of the manufacturer.
	File ”film_bl/ _gr/ _uv.tdl”:	General classification of the film according to color, sensitivity S and RLF compensation.
SCREEN	File ”screen.tdl”:	Screen types according to description of the manufacturer.
	File ”lumat_lg.tdl”:	Screen types according to luminous matter.
CHAMBER	File ”chamber.tdl”:	Different types of measuring chambers.
CASSETTE	File ”cassette.tdl”:	Different types of cassettes.
SYSTEM CORRECTION	File ”syscor.tdl”:	Select ”no corr. (ISO 9236-1)”.
CORRECTION FACTOR	Default: 1.0	Correction factor for switch-OFF dose.

Based on the combination of the components entered, the processor calculates the switch-OFF dose, kV correction and RLF compensation. The name for the screen/film combination, e.g. ”B400”, is taken from the “screen” default data set.

NOTE

Film, screen, etc. data selected are not directly stored in the generator.

It is recommended that they be entered in the table ”Data sets of chambers” 2Z-4 at the end of this modul.

- RESET the generator.

Color and sensitivity class of the screen/film combination are displayed on the desk, e.g.: “B400”.
Other screen/film combinations (data set 1 ... 5) for the chamber can be selected by the ± buttons.

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1.4.2.2. Manual DRC processing

The current data set of the screen/film combination is displayed.

* Abbreviation:	Abbreviation for the screen/film combination. Example: B400 = blue, speedclass 400.
Dose Request Chamber:	Senstitivity of the measuring chamber type in [µGy/V].
* Dose of FSC:	Switch-OFF dose of the screen/film combination in [µGy]. Linear ratio with respect to the film density.
kV70-Char. U_0 ... 9:	Checkpoints for kV-dependent density correction.
kV70-Char. Drel_0 ... 9:	Relative correction value for the dose.
RLF t_0 ... 9:	Checkpoints for time-dependent density correction. (RLF = **R**eciprocity **L**aw **F**ailure).
RLF Drel_0 ... 9:	Relative correction value for the dose.

* = Only these fields may be changed according to the system requirements.
All other fields must not be changed.

- If required, change the data and the abbreviation name.
  Usually no value except the basic density ”Dose of FSC” must be changed (see next page).
- Transmit the data set with <F2>.
- RESET the generator.

The SAVE <F3> and LOAD <F4> functions of ***XRGSCOPE*** permit straightforward copying of the measuring chamber programmings.

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1.4.2.3. Density correction for AEC technique (option)

Basic density per screen/film combination:

A hardware key is required at the PC for direct access to the switch-OFF dose.

- Make a test exposure for each screen/film combination.
  To do so, set the density correction = 0.
- Determine the density of the test exposures.
- Select menu:
  PROGRAM/ DOSE RATE CONTROL/ AMPLIMAT/ CHAMBER 1 ... 5/ **DATA SET 1 ... 5**
- Select manual DRC programming by pushing the <ESC> key.
- Correct the switch-OFF dose = “Dose of FSC” according to formular below:

$$\text{New switch-OFF dose} = \frac{\text{Desired density}}{\text{Measured density}} \times \text{Old switch-OFF dose}$$

- Transmit the data set by pushing the <F2> key.
- Repeat the procedure for each screen/film combination at each chamber.
- RESET the generator.

The switch-OFF dose can be set on the PC even without a hardware key.
To do so, call up the automatic DRC programming, repeat all the selections and change the correction factor for switch-OFF dose accordingly. Each time this programming is called up all the selections must be repeated.

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1.4.3. Fault exposure detection

Fault exposure detection is switched ON as a default for AEC and TDC. If in the initial phase of an exposure too little dose is measured, the exposure is aborted to protect the patient.

- Time of control measurement: 10% of backup time, min. 250ms at TDC
- Dose minimum: 4% of set density voltage at AEC, 4 ... 10% at TDC
- Backup time AEC: Calculated time from 9.5 times mAs of the respective 2-factor technique, max. 4s
- Backup time TDC: Exposure time set 0.3 ... 6s

This additional precaution can be switched OFF for both techniques individually in the menu:
PROGRAM/ DOSE RATE CONTROL/ FAULT EXPOSURE DETECTION/ **AEC OR TDC**

For details see section “FAULT FINDING”, chapter “OPTIMUS AEC switch-OFF philosophy”.

This monitoring does not take effect in the following cases, irrespective of programming:

- Using screen/film combinations with high speed in AEC technique.
- Exposure time in TDC technique is shorter than 1s.

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1.5. Application limits

1.5.1. X-mode limits

Using the menu:
PROGRAM/ APPLICATION LIMITS/ **X-MODE LIMITS**

Limit values can be defined for all available techniques. Some values look as if they are out of limit which they are indeed, but there are additional basic limit values programmed in the generator firmware. These are exposure technique dependent.

As an example the field of the ”Falling Load” technique:

X-ray Mode:	AEC falling load kV
Min. Time Limit [ms]:	[1.00]
Max. Time Limit [ms]:	[60000.00]
Min. Current Time Product Limit [mAs]:	[0.001]
Max. Current Time Product Limit [mAs]:	[580.000]

Min. Time Limit [ms]: Is always 1ms for all non-AEC (Automatic Exposure Control) techniques.
Exposures with AEC might be switched shorter than 1ms.

Max. Time Limit [ms]: Basic limits are technique dependent and can not be changed or increased:

AEC falling load		kV	4000ms
AEC fixed current		kV-mA	4000ms
TDC (Tomo Density Control)			6000ms
free techniques	⌈	kV-mA-ms	16000ms
	|	kV-mAs	16000ms
	⌊	kV-mAs-ms	16000ms

Min. Current Time Product Limit [mAs]: The smallest mAs - product is 0.5mAs.
AEC exposures with less than 0.5mAs are possible.

Max. Current Time Product Limit [mAs]: The default mAs - product is 580mAs for all AEC-techniques.
850mAs is the absolute limit the generator terminates.

NOTE

Local limits have to be taken into consideration.

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1.5.2. Thoravison limits

The kV-dependent mAs limits can be accessed via the menu:
PROGRAM/ APPLICATION LIMITS/ **THORAVISION LIMITS**

They are activated only in conjunction with an online Thoravision unit.
A change may only be made if instructed to do so by the service center.

Reference files on floppy disk: – ref_limx.tdl X-ray limits

Reference files on system disk Thoravision: – TH_LI128.tdl
– TH_LI64.tdl
– TH_LI32.tdl = ref_limt.tdl

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1.6. Human interface

Note

The Optimus generator of this system might has been delivered without APR option.
Before spending time trying to load APR check:

XRGSCOPE
>> Faultfind
>> Power ON Results
>> APR disabled: [No] = APR option present
APR disabled: [Yes] = No APR possible

If APR shall be possible order
MGR 0011 (change of an existing configuration)
MGR 2181 APR
with the generator serial number.

A maximum of up to 1024 APRs can be stored in the generator.

On a single RGDV button either up to 80 APRs can be programmed directly (10 pages of 8 each) or up to 400 APRs via menus.

The initial data sets are called ### APR name ### and they all have the same exposure parameters.

They can be directly assigned or via menu and submenu levels to registration devices RGDV 1 ... 8.

In case TEST APR is displayed after selection of a registration device, at least this particular registration device has not been assigned to any APRs.

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1.6.1. Additional program settings for generators without option APR

In case of a generator without option APR 9890 000 0282x, the menu/APR display field must be dark until selection of all exam./aux. units.
If it does not work AR_EMPTY.tdl must be loaded from the service disk for each exam./aux. unit.

In case TEST- APR appears in the menu/APR display field upon selection of the exam./aux. units, the AR_EMPTY.tdl can be loaded immediately because no APR/T is assigned to the exam./aux. unit.

In case another APR or menu appears on the desk it must be deleted before the AR_EMPTY.tdl can be loaded:

- Delete the APR/T under each exam./aux. unit.
  Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/
  MANUAL ASSIGNMENT/ **DELETE MENU**

After a RESET of the generator TEST APR appears in the menu/APR display field for each exam./aux. unit.

Now the AR_EMPTY.tdl can be loaded from the service disk for all exam./aux. units.

- Load AR_EMPTY.tdl for all exam./aux. units.
  Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/
  PREDEFINED ASSIGNMENTS

A list of possible TDL-files appears on the screen.

- Select file ”AR_EMPTY.tdl” from the list.

Only “none APR” appears.

Extended APR data table																		
No	APR Name	Tomo no.	Foc	V [%]	kV	mA	ms	mAs	Dose [µGy]	Dens.	Fields l m r	Technique pref background		Spectral Filter	FSC	Fluo. Curve	Menu Name	Submenu Name
1	buckytable	1	1		77	600.0	53.3	32.0	2.50	0	m	RAEC	RUQ	none	400	1		
2	tomography	1	1		77	16.0	2000.0	32.0	2.50	0	m	RAEC	RUQt	none	400	1		
3	wallstand	1	1		77	600.0	53.3	32.0	2.50	0	m	RAEC	RUQ	none	400	1		
4	free cassette	1	1		77	600.0	53.3	32.0	2.50	0	m	RAEC	RUQ	none	400	1		

- Select it for each active exam./aux. unit.

After a RESET of the generator the menu/APR display field is dark for all exam./aux. units.

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1.6.2. Language

- Assign the desired language.
  Select menu:
  PROGRAM/ HUMAN INTERFACE/ **SELECT LANGUAGE**

A language menu appears:

- English
- German
- French
- Spanish

- Select the desired language.
- RESET the generator.

A table lists which characters can be displayed on the control desk and how they can be indicated/entered at the service PC, e.g. for APR names, see 2Z-3 “List of characters”.

Certain characters can be generated at the PC only via the decimal code. To do so, push the <ALT> key on the PC and enter the numerical code.

1.6.3. Automatic programming of APRs (option)

NOTE

Pay attention in the rules of “PC and generator settings to avoid problems during up/downloading of CU complete files” described in modul “Software XRGSCOPE” chapter 1.1 of this section.

The installation disk contains data files for a complete, typical APR programming in different languages. Standard APR programs for each application can easily and quickly be loaded for each registration device.

- Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/
  PREDEFINED ASSIGNMENTS

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All files consist of the the same format “A***my**.tdl”

- Select with <TAB> and <UP-/DOWN-ARROWS> one of the files listed:

AR_EMPTY	=	for generators without APR option 9890 000 0282x
A*******	=	APR data file
***my**	=	Release **m**onth / **y**ear
*TS..V	=	Bucky TS with VARIOFOCUS RO 1648, RO 1750, SRO 2550 SRO 33 100
*T..V9	=	Bucky TS with VARIOFOCUS SRO 0951
*CO	=	Cosmos
*D	=	DigitalDiagnost
*R	=	Radiography
*TR	=	Trauma
*TS	=	BuckyTS
*V	=	VARIOFOCUS RO 1648, RO 1750, SRO 2550, SRO 33 100
*V9	=	VARIOFOCUS SRO 0951
*M	=	Mono focus tube
*P	=	Pediatrics
***DE(U)	=	German version
***ES(P)	=	Spanish version
***EN(G)	=	English version
***FR(A)	=	French version

Example: A D 91 V 9 EN.tdl
| | | | | |
| | | | | English version
| | | | Tube SRO 0951
| | | VARIOFOCUS
| | Release: September 2001
| DigitalDiagnost
APR data file

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Some files contain data sets in a window: **Available Examination Unit Type**

- Select one of the files listed and load it:

BUCKY **GR**	=	Bucky table APR **group** layer (menu technique)
BUCKY **PA**	=	Bucky table APR **paging** (scrolling through pages technique)
WALLSTAND GR	=	Bucky wallstand group
WALLSTAND PA	=	Bucky wallstand paging
FREE GR	=	Free technique (non-AEC) group
FREE PA	=	Free technique (non-AEC) paging
TOMO LT/HDH	=	Linear tomography with units HDH, BTS2, BTS4 group
TOMO LIN/PA	=	Linear tomography with units HDH, BTS2, BTS4 paging
TOMO BTC GR	=	Tomography with unit BuckyDiagnost TC group
TOMO BTC PA	=	Tomography with unit BuckyDiagnost TC paging
TOMO BTH GR	=	Tomography with unit BuckyDiagnost TH group
TOMO BTH PA	=	Tomography with unit BuckyDiagnost TH paging

- Repeat this procedure for each registration device.
- RESET the generator.

Now all APR programs which have been loaded are displayed on the desk.

If required:

- Change the menus and the assignments of the APRs according to chapter 1.6.4.
- Change the names and the contents of the APRs according to chapter 1.6.5.

NOTE

In case a complete APR program setting has to be replaced by another program setting, all other APR program settings under the registration device concerned must be deleted first.

Use APRMAN.

For deleting a program setting call menu:

PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/ MANUAL ASSIGNMENTS/ **DELETE MENU**

and select the blank line.

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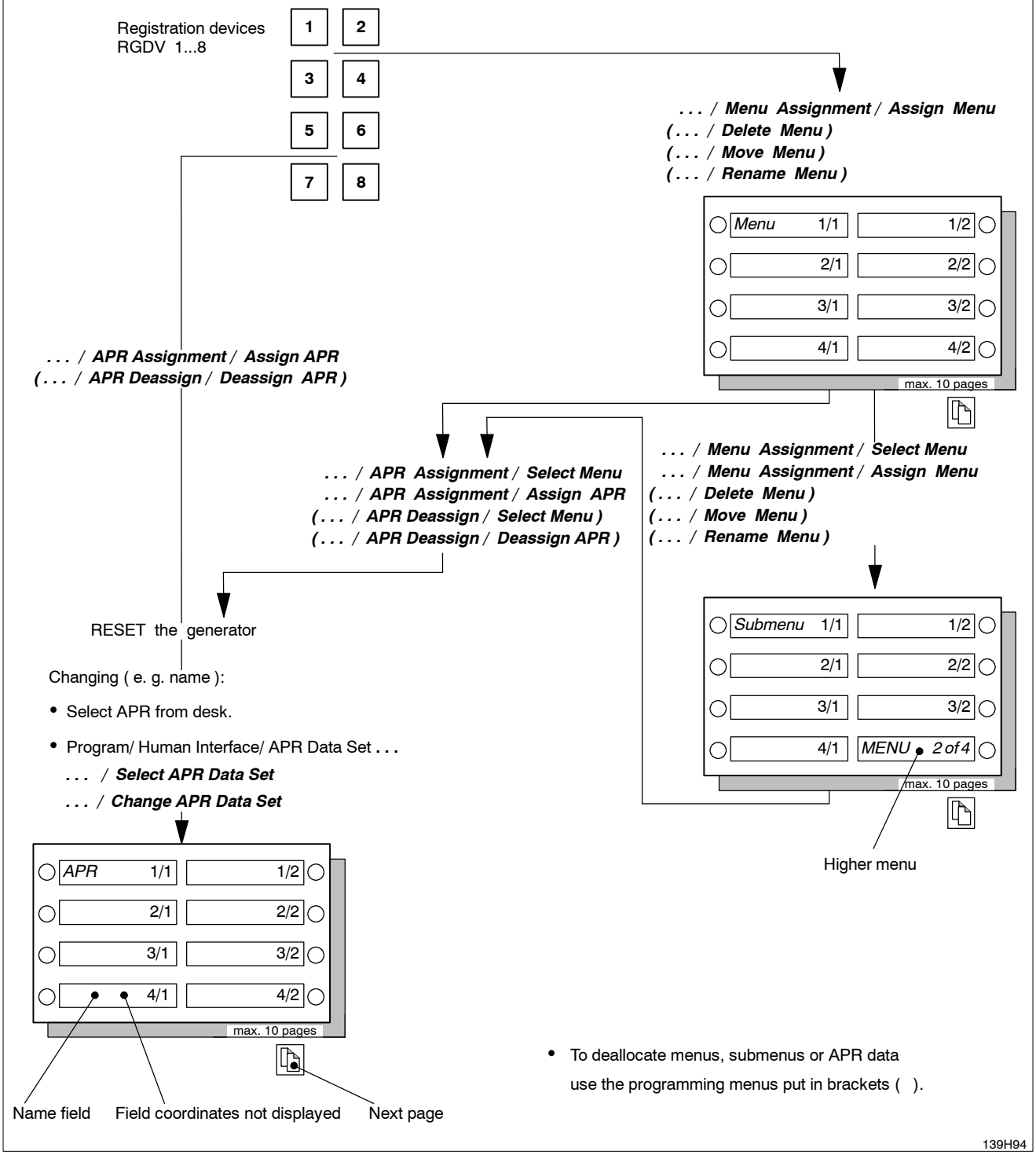
1.6.4. Manual programming of APRs (option)

- Use APRMAN.
  Select service menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/
  MANUAL ASSIGNMENT/ **. . .**

Manual APR and menu assignment possibilities via XRGSCOPE


Registration devices
RGDV 1...8
1
2
3
4
5
6
7
8
. . . / Menu Assignment / Assign Menu
(. . . / Delete Menu)
(. . . / Move Menu)
(. . . / Rename Menu)
Menu 1/1
1/2
2/1
2/2
3/1
3/2
4/1
4/2
max. 10 pages
. . . / APR Assignment / Assign APR
(. . . / APR Deassign / Deassign APR)
. . . / APR Assignment / Select Menu
. . . / APR Assignment / Assign APR
(. . . / APR Deassign / Select Menu)
(. . . / APR Deassign / Deassign APR)
. . . / Menu Assignment / Select Menu
. . . / Menu Assignment / Assign Menu
(. . . / Delete Menu)
(. . . / Move Menu)
(. . . / Rename Menu)
RESET the generator
Changing (e. g. name):
• Select APR from desk.
• Program/ Human Interface/ APR Data Set . . .
. . . / Select APR Data Set
. . . / Change APR Data Set
Submenu 1/1
MENU 2 of 4
Higher menu
APR 1/1
Name field
Field coordinates not displayed
Next page
• To deallocate menus, submenus or APR data
use the programming menus put in brackets ( ).
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1.6.4.1. Creating menus

- Assign the desired menu.
  Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/ MANUAL ASSIGNMENT/ **ASSIGN MENU**
- Enter the first menu name, e.g. <Body region 1>.
- If required, change the location suggested in the display. Otherwise the next vacant location is assigned.
- Enter the second menu name, e.g. <Body region 2>.

Etc.

1.6.4.2. Creating sub menus

- Assign the desired sub menu.
  Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/ MANUAL ASSIGNMENT/ MENU ASSIGNMENT/ **SELECT MENU**
- Select with the <CURSOR> from one of the windows a menu to be assigned with submenus.
- Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/ MANUAL ASSIGNMENT/ MENU ASSIGNMENT/ **ASSIGN MENU**
- Enter the first submenu name, e.g. <Left side>.
- If required, change the location suggested in the display. Otherwise the next vacant location is assigned.
- Enter the second submenu name, e.g. <Right side>.

Etc.

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1.6.4.3. Assigning APRs

- Assign desired APRs.
  Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/ MANUAL ASSIGNMENT/ APR ASSIGNMENT/ **SELECT MENU**
- Select with the <CURSOR> from one of the windows a menu or submenu.
  If no menu layer is desired, proceed.
- Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/ MANUAL ASSIGNMENT/ APR ASSIGNMENT/ **ASSIGN APR**
- Select from one of the windows an initial APR or an APR which has not been assigned.

  Initial APR: ### APR name ###
  Not assigned APR: e.g. <Thorax ap>

- If required, change the location suggested in the display. Otherwise the next vacant location is assigned.
- Assign the next APR.

Etc.

- RESET the generator.

Only after a RESET of the generator the menus, submenus and APRs are displayed on the desk.

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1.6.5. Changing of APR radiation parameters

- Select the APR to be changed on the desk, e.g. ### APR name ###.
- Select menu:
  PROGRAM/ HUMAN INTERFACE/ APR DATA SET/ **SELECT APR DATA SET**

  The number of the APR selected on the desk is displayed. Transmit data by pushing <F2>.
- Select menu:
  PROGRAM/ HUMAN INTERFACE/ APR DATA SET/ **CHANGE APR DATA SET**
- Change the contents of the APR, e.g. <NAME>, <kV> etc.
- Select the kV value according to the dose-equivalent series:
  40–41–42–44–46–48–50–52–55–57–60–63–66–70–73–77–81–85–90–96–102–109–117–125–133–141–150 kV.

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Parameter	Value	Remark
APR number	1 ... 1024	
APR name	up to 16 characters	
Focus	– Δ small – Δ vario – Δ large	
VARIOFOCUS ratio [%]	20%, 35%, 50%, 65%, 80% of small focus	
Dose measurement field (left)	Δ ON/OFF	AEC operable only if at least one field is ON
Dose measurement field (middle)	Δ ON/OFF	
Dose measurement field (right)	Δ ON/OFF	
Preferred technique	–non automatic –automatic	
AEC technique	– AEC falling load kV – AEC fixed current kV-mA – TDC	
No AEC technique	– kV-mA-ms – kV-mAs – kV-mAs-ms	
Tube current max. factor [%]	1 ... 100	
PSC U thin (dose equiv. steps)	0 ... 5	
PSC U thick (dose equiv. steps)	0 ... 5	
PSC Q thin (6% steps)	0 ... 10	
PSC Q thick (6% steps)	0 ... 10	
PSC dens. thin (6% steps)	0 ... 10 (max. limit = 8)	
PSC dens. thick (6% steps)	0 ... 10 (max. limit = 8)	
Exposure data U [kV]	Δ 40 ... 150	
Exposure data I [mA]	Δ 0.1 ... 2000	
Exposure data Q [mAs]	Δ 0,5 ... 850	
Exposure time [ms]	Δ 1 ... 16000 (60000)	
Exposure data density (6% steps)	Δ –40 ... +40 (max. limit = ±8)	
Screen/film combination	Δ RGDV dependent	Default = Data Set 1
Tomo no.	1 ... 16 assignment of a tomographic figure	
Spectral filter	– none – 2mm Al – 0.1mm Cu + 1mm Al – 0.2mm Cu + 1mm Al	Default = none
***** Fluoroscopy curve	*N/A*	*no function*

Δ = The basic setting of these data can also be performed from the desk (RESET + APR). Refer to the operator's manual.

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The following parameters must also be taken into account for AEC techniques:

- mAs: basis for calculating the backup time for AEC, the tube current for AEC fixed current (kV-mA) and the initial mA value for TDC
- t: exposure time for TDC and AEC fixed current

For details see chapters 1.6.5.2 and 1.7.

If AEC FIXED CURRENT kV-mA or TDC is programmed as the preferred technique, the kV/mA/s or kV/mAs/s technique must be selected under NO AEC TECHNIQUE.

- Transmit data by pushing <F2>.
- Select the next APR on the desk, select it in the programming menu and change it.

Etc.

- RESET the generator.

Organ-dependent correction:

- Select the APR to be changed on the desk.
- Select menu:
  PROGRAM/ HUMAN INTERFACE/ APR DATA SET/ **CHANGE APR DATA SET**

  Transmit the displayed APR number by pushing the <F2> key.
- Select menu:
  PROGRAM/ HUMAN INTERFACE/ APR DATA SET/ **CHANGE APR DATA SET**
- Exposure data density: –40 ... +40 = correction in steps of 6%. Max. limit = ±8.

  The number of correction steps must match the programmed step rate.

  Example:
  The desk display has been programmed to 12% step rate in the menu:
  PROGRAM/ REGISTRATION DEVICE/ RGDV 1 ... 8/ DATA SET B/ **DENSITY STEPS**

  To be able to display a density correction of +1 for a certain APR, two corrections steps (2 x 6% = 12%) must be programmed under this APR.
- Select the next APR on the desk, select it in the programming menu and change it.

Etc.

- RESET the generator.

Correction for each RGDV 1 ... 8:

This correction is possible but for reasons of clarity it should not be used.

- Select menu:
  PROGRAM/ REGISTRATION DEVICE/ RGDV 1 ... 8/ **DATA SET B**
- Density correction: –8 ... +8 = correction in steps of 6%.

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1.6.5.1. Density correction for non-AEC techniques

The supplied APR standard sets are mostly based on a screen/film combination with a speed class of 400. APR's for extremities and some other applications are based on a 100 or 200-type system. Depending on the local situation the mAs or s parameters of all the relevant APRs must be adapted.

Example:
The customer uses a 200-type system. To change from the existing 400 values the relevant APRs must be reprogrammed to double the mAs products or to double the exposure time (400 divided by 200 = 2).

- Select the relevant APR at the control desk.
- Set the new parameters at the control desk.
- Save the new parameters as default values.
  To do this push the RESET button and the corresponding APR button. The asterisk in the APR name as an indication of overwritten data disappears.
  Use APRMAN.

1.6.5.2. AEC fixed current (kV-mA)

For this exposure technique the APRs must have the following programmings:

- Dose measurement field: ON (at least 1 field must be set to ON)
- Preferred technique: automatic
- AEC technique: AEC fixed current kV-mA
- No AEC technique: kV-mAs-ms technique (RUQT) or kV-mA-ms (RUIT)
- Exposure data U: = anatomical kV value
- Exposure data Q/I: = anatomical mAs/mA product based on the screen/film combination used
- Exposure time t: = anatomical exposure time

  The mA value is calculated automatically.

In the APR standard files supplied the following APR's is programmed to kV-mA technique:

Dens axis F	/	dens axis F	/	dens axis F	/	atlas F	
(German	/	English	/	French	/	Spanish)	

The APR is marked with F.

The mAs value is based on a 400-type screen/film combination and must be adapted to the combinations actually used.
E. g.: If a 200-type combination is used, the mAs value must be doubled.

If the TDC option is installed, the preferable technique for all exposures is the one where the exposure time is the determining factor. TDC is not restricted to tomography applications only.

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1.6.6. Moving / copying of an APR data set

Determination of the number of APR data set X to where APR data set Y is to be moved / copied.

- Select APR data set **X** on the desk.
- Select menu:
  PROGRAM/ HUMAN INTERFACE/ APR DATA SET/ **SELECT APR DATA SET**
- Note down the number of APR data set **X**, e.g. 100.

Changing of the number of APR data set Y to be moved / copied to the number of APR data set X

- Select APR data set **Y** on the desk.
- Select menu:
  PROGRAM/ HUMAN INTERFACE/ APR DATA SET/ **SELECT APR DATA SET**

  Transmit by pushing <F2>.
- Select menu:
  PROGRAM/ HUMAN INTERFACE/ APR DATA SET/ **CHANGE APR DATA SET**
- Replace the number of APR data set **Y** with the number of APR data set **X** in the input mask, e.g. nnn ⇒ 100.
- Transmit this number by pushing <F2>.
- RESET the generator.

APR data set **Y** is displayed in place of the old APR data set **X** on the desk.
In case APR data set **Y** is merely moved and not copied to the location of APR data set **X**, the original APR data set **Y** must be deleted at the end of programming.

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1.6.7. Deleting of APRs

- Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/ MANUAL ASSIGNMENT/ APR DEASSIGN/ **SELECT MENU**

  Required only if the APR is assigned to a menu or submenu.

- Select the associated menu or submenu from one of the windows.
- Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/ MANUAL ASSIGNMENT/ APR DEASSIGN/ **DEASSIGN APR**
- Select the APR to be deleted from one of the windows.
- RESET the generator.

An APR which has been deleted is no longer displayed on the desk but remains stored in the generator.
It can be re-activated according to chapter 1.6.4.

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1.6.8. Manipulating menus

Deleting:

- Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/ MANUAL ASSIGNMENT/
  DELETE MENU
- Select the menu or submenu to be deleted from one of the windows.
  For deleting all APRs of an RGDV program select the blank line.
- RESET the generator.

Shifting:

- Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/ MANUAL ASSIGNMENT/
  MOVE MENU
- Select the menu or submenu from one of the windows.
- Enter the new positions.
- RESET the generator.

Renaming:

- Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/ MANUAL ASSIGNMENT/
  RENAME MENU
- Select the menu or submenu from one of the windows.
- Enter the name in the lowermost line.
- RESET the generator.

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1.6.9. External APR assignment

A maximum of 2 external APRT modules can be connected to the OPTIMUS R/F via adapter 4 auxil. units 1WA and 2WA.
Refer Z1-15.1 "Adapter 4 auxil. units".

- Define the external APRT modules by placing links W1 through W3 on adapter WA.
  Also see table "Assignment of the external APRT modules" below and Z1-15.1 "Adapter 4 auxil. units".

- Program the desired APRT in the generator.

- Select the desired APRT numbers for the external APRT modules from the RGDVs:
  PROGRAM/ HUMAN INTERFACE/ APR DATA SET/ **SELECT APR DATA SET**

- Program the RGDVs that are to be switched over by the external APRT modules.
  Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/ EXTERNAL APR ASSIGNMENT/ **...**
  .... DEVICE INTERFACE 1
  or

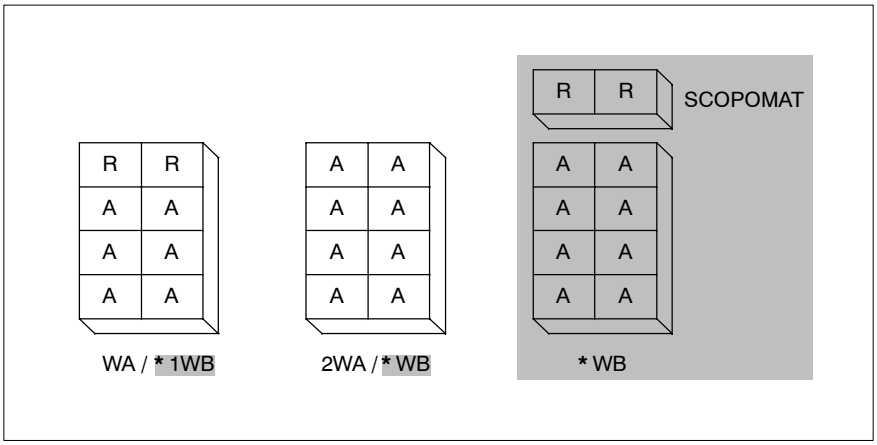
*** .... DEVICE INTERFACE 3**

Only two RGDVs can be programmed and, respectively, switched over. Once programmed these two RGDVs are valid irrespective of the selected APRs of the other buttons of the module.

- Program the APRs that are to be selected by the external APR/T modules.
  Select menu:
  PROGRAM/ HUMAN INTERFACE/ RGDV RELATED ASSIGNMENT/ RGDV 1 ... 8/ EXTERNAL APR ASSIGNMENT/**...**
  .... DEVICE INTERFACE 1 : 6 APR keys can be assigned for each RGDV
  and/or
  .... DEVICE INTERFACE 2 : 8 APR keys can be assigned for each RGDVand/or
  and/or

*** .... DEVICE INTERFACE 3** : 8 APR keys can be assigned for each RGDV

- Enter the RGDVs and APRs programmed for the 3 device interfaces in table 2Z-5 "Programming of device interfaces".



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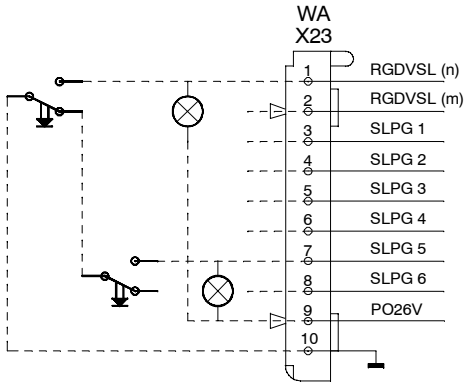
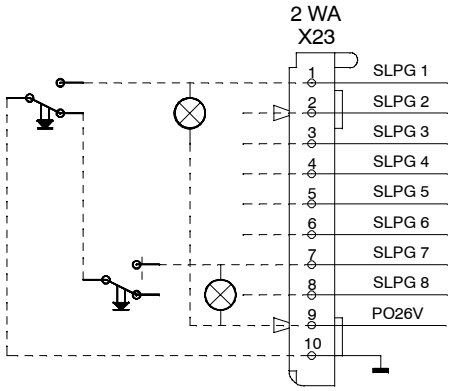
Assignment of the external APRT modules:

Device interface	Adapter	Programming W1/W2/W3	Hardware connection	Remark
1	WA or 1 WA	W1–W3 open		2 selectable RGDVs can be programmed. They are independent of the APRs programmed. Maximum number of APRs: 6 x 8 (RGDV) = 48 APRs Recommendation: 2 APRs assigned to each button.
2	2 WA	only W1 closed		RGDV cannot be selected. Maximum number of APRs: 8 x 8 (RGDV) = 64 APRs Recommendation: 2 APRs assigned to each button. Operation as 2 WA is possible also without 1 WA. Refer to drawing Z2–15.1 Cabinet wiring: Decade adapter WA

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1.7. Option: Tomo Density Control TDC

For this exposure technique the APRs must have the following programming:

- Dose measurement field: ON (at least 1 field must be set to ON)
- Preferred technique: automatic
- AEC technique: TDC
- No AEC technique: kV-mAs-ms technique (RUQT) or kV-mA-ms (RUIT)
- Exposure data U: = anatomical kV
- Exposure data Q/I: = anatomical mAs/mA product based on the screen/film combination used
- Exposure time t: = anatomical exposure time

The mAs product is used to calculate the start current, indicated under “Exposure data I”.
In the APR files supplied all the APRs for tomography applications are programmed to TDC. If there is no TDC option installed, the manual technique is selected as the preferred technique automatically.

TDC is not restricted to tomography applications only so it can be preferred for all exposures where exposure time is the determining factor.

The respective mAs product is generally based on a 400-type screen/film combination and must be adapted to the combinations actually used.
E. g.: If a 200-type combination is used, the mAs product must be doubled.

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1.8. Option: VARIOFOCUS

For the VARIOFOCUS option, special APR files have to be loaded. These are designated with a ”V” in the file name and contain correspondingly defined APRs.

VARIOFOCUS is programmed as a percentage mix of the small focus with the large focus.
The following steps are possible:
20%, 35%, 50%, 65% and 80% of the small focus.
Default: 50%.

The percentage mix is not displayed directly on the control desk and can only be estimated indirectly via the small/large focus exposure time.

It is only possible to display and change the percentage mix via XRGSCOPE.

- Select menu:
  PROGRAM/ HUMAN INTERFACE/ APR DATA SET/ **CHANGE APR DATA SET**

  However, VARIOFOCUS can be selected via the control desk and can be stored as default focus for an APR, too.
  The default ratio is always 50%.

VARIOFOCUS is possible for tubes with superimposed focal spots only.

The following tubes are suitable for the application: RO 1648, RO 1750, SRO 0951, SRO 2550, SRO 33 100.

1.9. Option: Area Dose Calculator

This option operates in conjunction with a unit and a collimator which are CAN-controlled and supply information about SID, collimation and added filters only.

See subsystem manual OPTIMUS RAD section 6: ADJUSTMENTS
chapter 1.x: Checking / Correction

1.10. Acceptance test

- Execute the acceptance test.
  See subsystem manual OPTIMUS RAD section 7: ACCEPTANCE
- Observe all applicable national regulations.

For U.S.A applications check the H.H.S requirements!

After completition of setting-to-work, the system must be tested for H.H.S. compliance according the P.M.S.I. comprehensive compliance testing workbook: Numeric code 4535 800 2035x.

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1.11. Interlock facility for APR modification

- Select menu:
  PROGRAM/ HUMAN INTERFACE/ **APR MODIFIABLE BY USER**

  It is possible to prevent a customer from being able to store APR modifications as default setting via the control desk.

  Default: YES

1.12. Backup of all configuration data

A hardware key is required for the PC.

To save the configuration data use the CONFIGURATION BACKUP disk supplied.

- Save the complete SW programming of the generator on the floppy disk by using the menu:
  ACCEPT/ BACKUP/ ...

1. ... RGDV RELATED ASSIGNMENTS/ RGDV 1 ... 8/ **APR ASSIGNMENTS**

   Use APRMAN.

   After READING (turning bar) the PC offers the default backup name:
   Backup filename: **APR_BAK1 ... 8.tdl**
   The name can be changed into any other file name.
   The path (harddisk) is automatically taken into account.
   It is also possible to type:
   A:\"filename" <RETURN>
   to load the backup files directly to the floppy disk.

2. ... **CU complete**

NOTE

Pay attention to the rules of "PC and generator settings to avoid problems during up/downloading of CU complete files" described in modul "Software XRGSCOPE" chapter 1.1 of this section.

A disk space of 700kByte is required.
It takes about 8min to save the data to the disk.

The default backup name:
Backup File Name: **CUBACKUP.TDL**
The name can be changed into any other filename.
The path (harddisk) is automatically taken into account.
It is also possible to type:
A:\"filename" <RETURN>
to load the backup files directly to the floppy disk.

■

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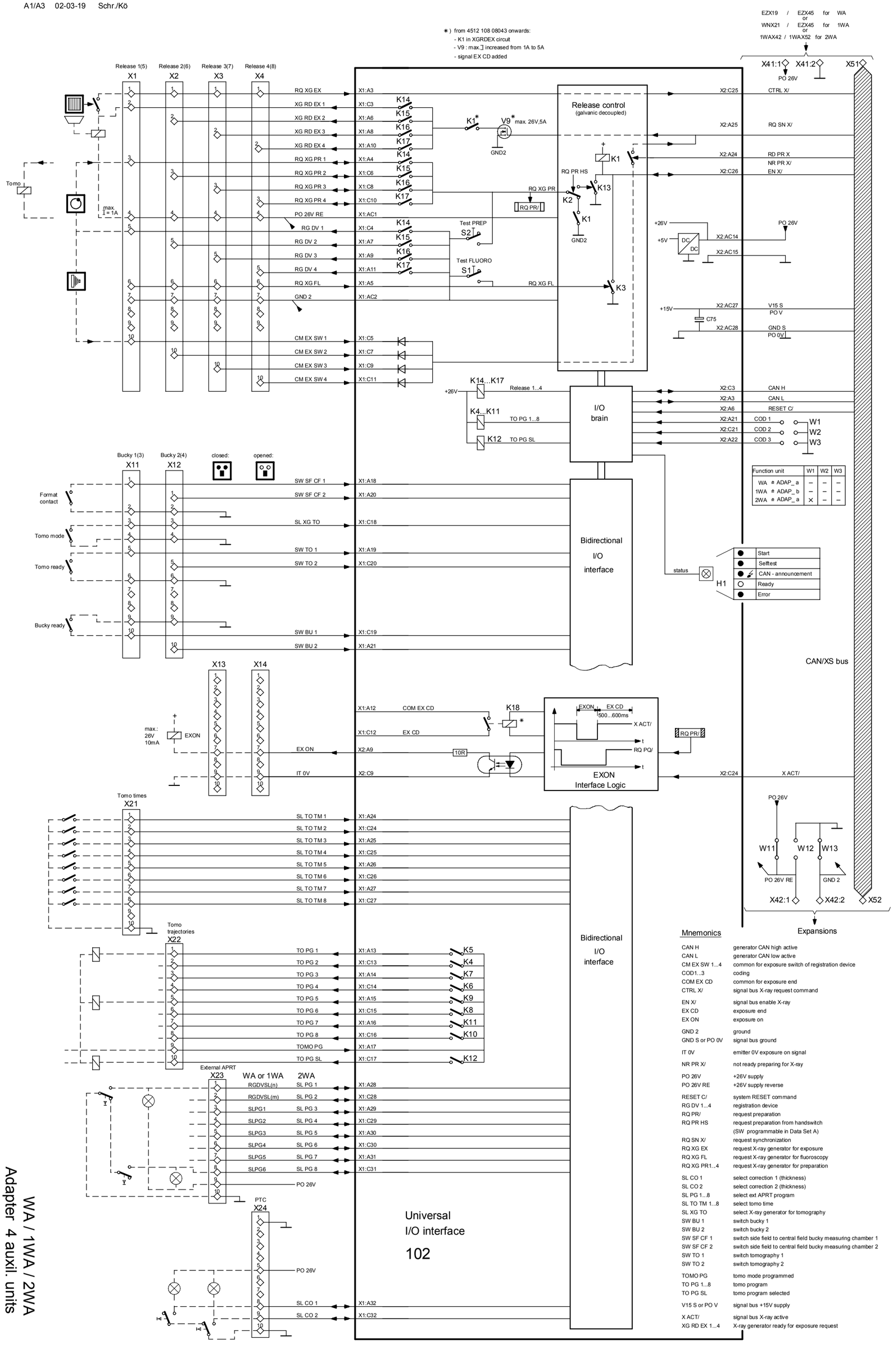
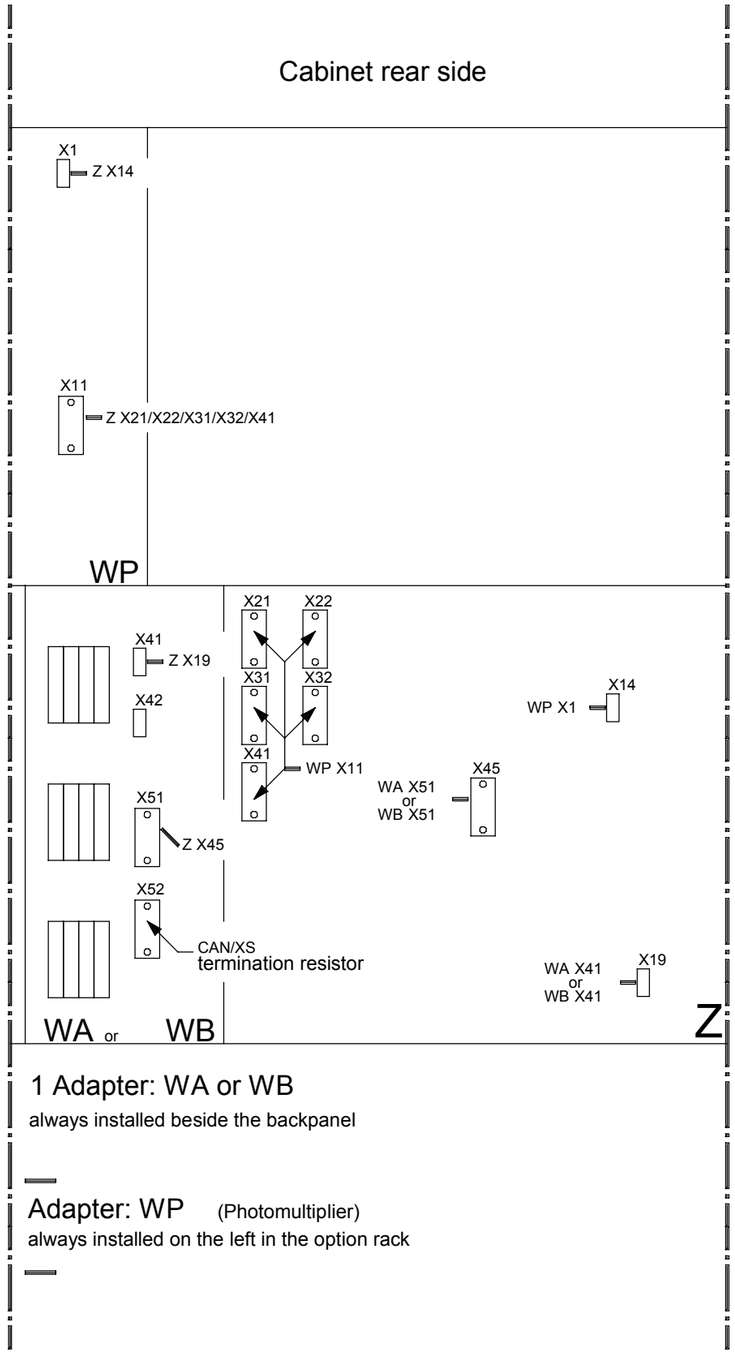


WA / 1WA / 2WA
Adapter 4 auxil. units

Z1-15.1

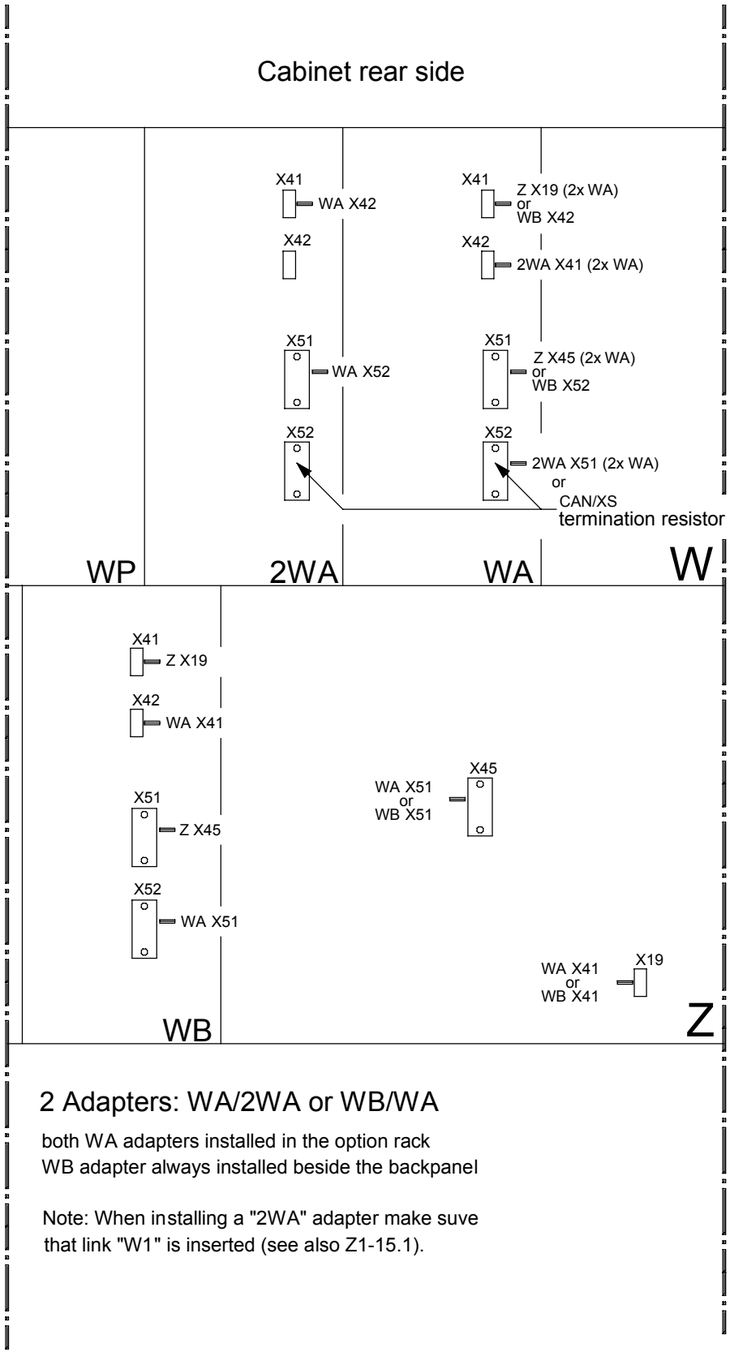


1 Adapter: WA or WB

always installed beside the backpanel

Adapter: WP (Photomultiplier)

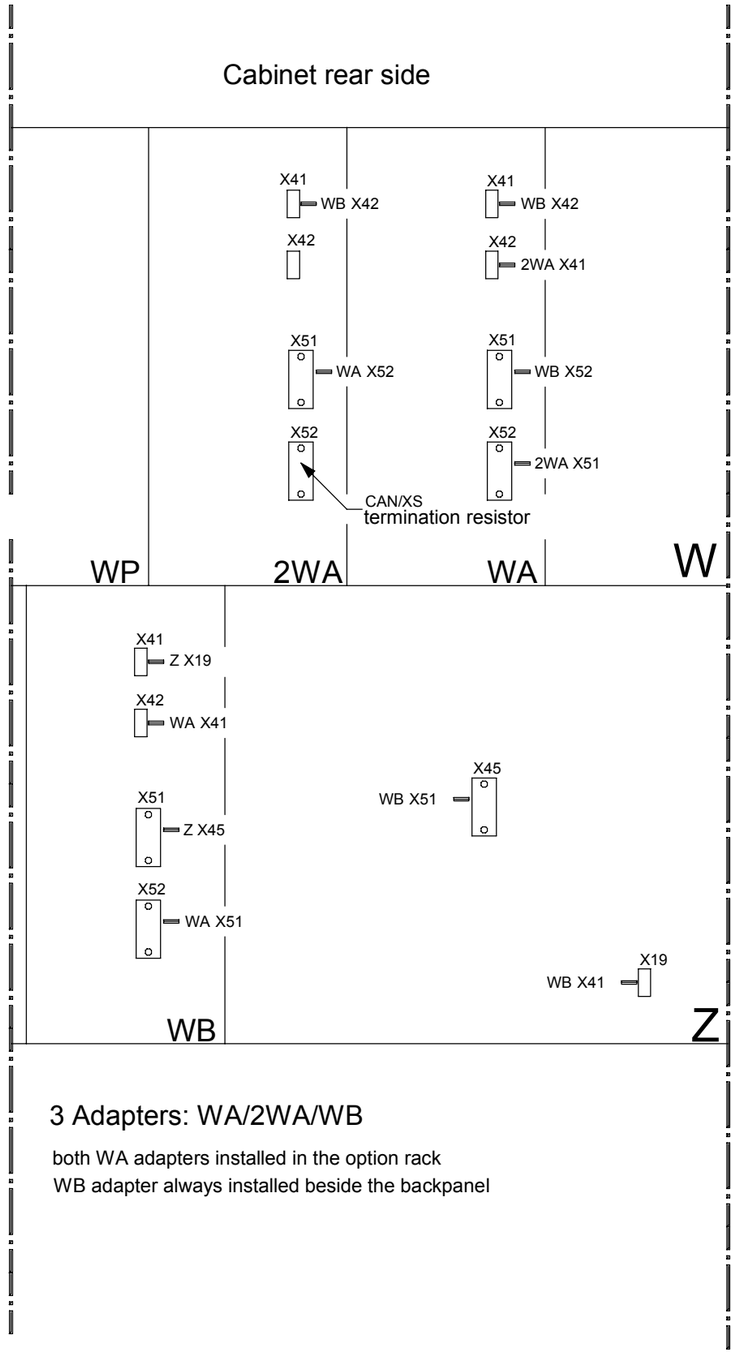
always installed on the left in the option rack



2 Adapters: WA/2WA or WB/WA

both WA adapters installed in the option rack
WB adapter always installed beside the backpanel

Note: When installing a "2WA" adapter make suve that link "W1" is inserted (see also Z1-15.1).



3 Adapters: WA/2WA/WB

both WA adapters installed in the option rack
WB adapter always installed beside the backpanel

CAN/XS termination resistor is alweys installed at the end of the chain!

A3/A3 02-03-19 Schr./Kö

WA/WB/WP
Cabinet wiring:
Decade adapter 4 auxil. units
Adapter Photomultiplier (SEV)

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RGDV programming

2Z-2.0

- Name : -								
Data Set A : Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV5	RGDV6	RGDV7	RGDV8
- Room :								
- Tube :								
- Release circuit number :								
- Enable handswitch at generator desk :								
- Syncmaster present :								
- Exposure switch type :								
- Bucky format density correction :								
- Cone density correction :								
- Dose measurement input :								
- Dose measurement sensor :								
- Exposure series/Tomo movement (No break after exposure end):								
- Release delay :								
- Mounted radiographical controller :								
- Release circuit adaptation unit :								
- Mounted tomo extension :								
- Medium II format kV correction (dose equiv. steps) :								
- Medium II format density correction (6% steps) :								
- Medium II format mAs correction (6% steps) :								
- Small II format kV correction (dose equiv. steps) :								
- Small II format density correction (6% steps) :								
- Small II format mAs correction (6% steps) :								
Data Set B :								
- Used for tomo :								
- Used for fluoroscopy :								
- CT add on :								
- Disable time override :								
- Tube power factor :								
- kV steps :								
- mAs steps :								
- mA steps :								
- time steps :								
- Density steps :								
- Density correction (6% steps) :								
- Underexposure display :								
- Tube overload protection :								

Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :		**Bucky / Tomo 1WA : Decade Bucky 1/2**	**WAX11**	**WAX12**	**Bucky / Tomo 1WA \ Tomo time [s] :**			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] RGDV5 [ ] RGDV6 [ ] RGDV7 [ ] RGDV8 [ ]	Tomo mode switch			Tomo time 1 :		Tomo time 5 :	
		Bucky RGDV - switch related			Tomo time 2 :		Tomo time 6 :	
		Bucky RGDV			Tomo time 3 :		Tomo time 7 :	
		Bucky RGDV			Tomo time 4 :		Tomo time 8 :	
		Tomo RGDV - switch related			Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

4512-983-05611_2Z-2_2_a010

- *Bucky Diagnost TH with Bucky-Controller* - *D76 : Exposure Scopo / BV-DSI*	*Name :*	Bucky	Tomo	Bucky wall stand	Free cassette	D 76 Scopo	D 76 BV - DSI		
Data Set A :	Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV5	RGDV6	RGDV7	RGDV8
- Room :		1	1	1	1	1	1		
- Tube :		1	1	1	1	2	2		
- Release circuit number :		do not care	do not care	do not care	do not care	1	2		
- Enable handswitch at generator desk :		yes	yes	yes	yes	no	no		
- Syncmaster present :		yes	yes	yes	yes	yes	yes		
- Exposure switch type :		double step	double step	double step	double step	double step	double step		
- Bucky format density correction :		0	0	0	0	0	0		
- Cone density correction :		0	0	0	0	0	0		
- Dose measurement input :		EZ X21	none / [EZ X21]	EZ X31	none	EZ X22	EZ X41		
- Dose measurement sensor :		Bucky amplimat	Bucky amplimat	Bucky amplimat	(Bucky amplimat)	Scopo amplimat	photo sensor / amplimat input		
- Exposure series/Tomo movement :		no	no	no	no	yes	yes		
- Release delay :		enable	enable	enable	enable	enable	enable		
- Mounted radiographical controller :		Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	none	none		
- Release circuit adaptation unit :		none	none	none	none	1WB	1WB		
- Mounted tomo extension :		none	none	none	none	none	none		
- Medium II format kV correction (dose equiv. steps) :		0	0	0	0	0	0 [1)]		
- Medium II format density correction (6% steps) :		0	0	0	0	0	0 [1)]		
- Medium II format mAs correction (6% steps) :		0	0	0	0	0	0 [1)]		
- Small II format kV correction (dose equiv. steps) :		0	0	0	0	0	0 [1)]		
- Small II format density correction (6% steps) :		0	0	0	0	0	0 [1)]		
- Small II format mAs correction (6% steps) :		0	0	0	0	0	0 [1)]		
Data Set B :									
- Used for tomo :		no	yes	no	no	no	no		
- Used for fluoroscopy :		no	no	no	no	yes	yes		
- CT add on :		no	no	no	no	no	no		
- Disable time override :		no	no	no	no	no	no		
- Tube power factor :		100 %	100 %	100 %	100 %	100 %	100 %		
- kV steps :		Dose equiv. [1)]	Dose equiv. [1)]	Dose equiv. [1)]	Dose equiv. [1)]	Dose equiv. [1)]	Dose equiv. [1)]		
- mAs steps :		25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]		
- mA steps :		25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]		
- time steps :		25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]	25 % [1)]		
- Density steps :		12 % [1)]	12 % [1)]	12 % [1)]	12 %	12 % [1)]	12 %		
- Density correction (6% steps) :		0	0	0	0	0	0		
- Underexposure display :		yes	yes	yes	yes	yes	yes		
- Tube overload protection :		on	on	on	on	on	on		

Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :		~~**Bucky / Tomo 1WA : Decade Bucky 1/2**~~	~~**WAX11**~~	~~**WAX12**~~	~~**Bucky / Tomo 1WA \ Tomo time [s] :**~~			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] RGDV5 [x] RGDV6 [x] RGDV7 [ ] RGDV8 [ ]	Tomo mode switch	----	----	Tomo time 1 :	----	Tomo time 5:	----
		Bucky RGDV - switch related	----	----	Tomo time 2 :	----	Tomo time 6 :	----
		Bucky RGDV	----	----	Tomo time 3 :	----	Tomo time 7 :	----
		Bucky RGDV	----	----	Tomo time 4 :	----	Tomo time 8 :	----
		Tomo RGDV - switch related	----	----	Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

1) = has to be adjustet on site

[ ] = TDC

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(a/01.0)

RGDV programming: example 2

2Z-2.2

4512-983-05631_2Z-2_4_a010

HDH : *without / [with tomo time input]* ***Name :***	Bucky	Tomo	Bucky wall stand	Free cassette	Free cassette USA			
Data Set A : Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV4	RGDV6	RGDV7	RGDV8
- Room :	1	1	1	1	1			
- Tube :	1	1	1	1	1			
- Release circuit number :	1	1	3	(4)	4			
- Enable handswitch at generator desk :	yes	yes	yes	yes	yes			
- Syncmaster present :	yes	yes	yes	no	yes			
- Exposure switch type :	double step	double step	double step	double step	double step			
- Bucky format density correction :	0	0	0	0	0			
- Cone density correction :	0	0	0	0	0			
- Dose measurement input :	EZ X21	none / [EZ X21]	EZ X31	none	none			
- Dose measurement sensor :	Bucky amplimat	Bucky amplimat	Bucky amplimat	(Bucky amplimat)	(Bucky amplimat)			
- Exposure series / Tomo movement :	no	yes	no	no	no			
- Release delay :	enable	enable	enable	enable	enable			
- Mounted radiographical controller :	none	none	none	none	none			
- Release circuit adaptation unit :	1WA	1WA	1WA	none	1WA			
- Mounted tomo extension :	none	none (1WA)	none	none	none			
- Medium II format kV correction (dose equiv. steps) :	0	0	0	0	0			
- Medium II format density correction (6% steps) :	0	0	0	0	0			
- Medium II format mAs correction (6% steps) :	0	0	0	0	0			
- Small II format kV correction (dose equiv. steps) :	0	0	0	0	0			
- Small II format density correction (6% steps) :	0	0	0	0	0			
- Small II format mAs correction (6% steps) :	0	0	0	0	0			
Data Set B :								
- Used for tomo :	no	no (yes)	no	no	no			
- Used for fluoroscopy :	no	no	no	no	no			
- CT add on :	no	no	no	no	no			
- Disable time override :	no	no	no	no	no			
- Tube power factor :	100 %	100 %	100 %	100 %	100 %			
- kV steps :	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)			
- mAs steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)	25 % 1)			
- mA steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)	25 % 1)			
- time steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)	25 % 1)			
- Density steps :	12 % 1)	12 % 1)	12 % 1)	12 %	12 %			
- Density correction (6% steps) :	0	0	0	0	0			
- Underexposure display :	yes	no	yes	yes	yes			
- Tube overload protection :	on	on	on	on	on			

~~**Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :**~~		**Bucky / Tomo 1WA : Decade Bucky 1/2**	**WAX11**	**WAX12**	**Bucky / Tomo 1WA \ Tomo time [s] :**			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] ~~RGDV5 [ ] RGDV6 [ ] RGDV7 [ ] RGDV8 [ ]~~	Tomo mode switch	dis(en)able	disable	Tomo time 1 :	0,8	Tomo time 5 :	0,1
		Bucky RGDV - switch related	RGDV 1	none	Tomo time 2 :	3,2	Tomo time 6 :	0,1
		Bucky RGDV	RGDV 3	none	Tomo time 3 :	0,8	Tomo time 7 :	0,1
		Bucky RGDV	none	none	Tomo time 4 :	3,2	Tomo time 8 :	0,1
		Tomo RGDV - switch related	RGDV 2	none	Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

1) = has to be adjustet on site

[ ] = TDC

RGDV programming: example 4

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BuckyDIAGNOST with Bucky-Controller TH / TH2 / DigitalDiagnost ***Name :***	Bucky	Tomo	Bucky wall stand	Free cassette				
Data Set A : Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV5	RGDV6	RGDV7	RGDV8
- Room :	1	1	1	1				
- Tube :	1	1	1	1				
- Release circuit number :	do not care	do not care	do not care	do not care				
- Enable handswitch at generator desk :	yes	yes	yes	yes				
- Syncmaster present :	yes	yes	yes	yes				
- Exposure switch type :	double step	double step	double step	double step				
- Bucky format density correction :	0	0	0	0				
- Cone density correction :	0	0	0	0				
- Dose measurement input :	EZ X21	none / [EZ X21]	EZ X31	none				
- Dose measurement sensor :	Bucky amplimat	Bucky amplimat	Bucky amplimat	(Bucky amplimat)				
- Exposure series / Tomo movement :	no	no	no	no				
- Release delay :	enable	enable	enable	enable				
- Mounted radiographical controller :	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost				
- Release circuit adaptation unit :	none	none	none	none				
- Mounted tomo extension :	none	none	none	none				
- Medium II format kV correction (dose equiv. steps) :	0	0	0	0				
- Medium II format density correction (6% steps) :	0	0	0	0				
- Medium II format mAs correction (6% steps) :	0	0	0	0				
- Small II format kV correction (dose equiv. steps) :	0	0	0	0				
- Small II format density correction (6% steps) :	0	0	0	0				
- Small II format mAs correction (6% steps) :	0	0	0	0				
Data Set B :								
- Used for tomo :	no	yes	no	no				
- Used for fluoroscopy :	no	no	no	no				
- CT add on :	no	no	no	no				
- Disable time override :	no	no	no	no				
- Tube power factor :	100 %	100 %	100 %	100 %				
- kV steps :	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)				
- mAs steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				
- mA steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				
- time steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				
- Density steps :	12 % 1)	12 % 1)	12 % 1)	12 %				
- Density correction (6% steps) :	0	0	0	0				
- Underexposure display :	yes	yes	yes	yes				
- Tube overload protection :	on	on	on	on				

~~Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :~~		~~Bucky / Tomo 1WA : Decade Bucky 1/2~~	~~WAX11~~	~~WAX12~~	~~Bucky / Tomo time~~			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] RGDV5 [ ] RGDV6 [ ] RGDV7 [ ] RGDV8 [ ]	Tomo mode switch	----	----	Tomo time 1 :	----	Tomo time 5:	----
		Bucky RGDV - switch related	----	----	Tomo time 2 :	----	Tomo time 6 :	----
		Bucky RGDV	----	----	Tomo time 3 :	----	Tomo time 7 :	----
		Bucky RGDV	----	----	Tomo time 4 :	----	Tomo time 8 :	----
		Tomo RGDV - switch related	----	----	Time setting for input at WA X21:1 8			
For WBX11 : 9 - -10 (ready) und 1- -2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 - -> Bucky - Tomo remote switchover RGDVs*						

1) = has to be adjustet on site

[ ] = TDC

RGDV programming: example 5

4512 983 05641 (a/01.0) 2Z-2.5

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BuckyDIAGNOST TS	***Name :***	Bucky	Tomo	Bucky wall stand	Free cassette				
Data Set A :	Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV5	RGDV6	RGDV7	RGDV8
- Room :		1	1	1	1				
- Tube :		1	1	1	1				
- Release circuit number :		1	1	2	(1)				
- Enable handswitch at generator desk :		yes	yes	yes	yes				
- Syncmaster present :		yes	yes	yes	no				
- Exposure switch type :		double step	double step	double step	double step				
- Bucky format density correction :		0	0	0	0				
- Cone density correction :		0	0	0	0				
- Dose measurement input :		EZ X21	none / [EZX21]	EZ X31	none				
- Dose measurement sensor :		Bucky amplimat	Bucky amplimat	Bucky amplimat	Bucky amplimat				
- Exposure series / Tomo movement :		no	yes	no	no				
- Release delay :		enable	enable	enable	enable				
- Mounted radiographical controller :		none	none	none	none				
- Release circuit adaptation unit :		1WA	1WA	1WA	none				
- Mounted tomo extension :		none	1WA	none	none				
- Medium II format kV correction (dose equiv. steps) :		0	0	0	0				
- Medium II format density correction (6% steps) :		0	0	0	0				
- Medium II format mAs correction (6% steps) :		0	0	0	0				
- Small II format kV correction (dose equiv. steps) :		0	0	0	0				
- Small II format density correction (6% steps) :		0	0	0	0				
- Small II format mAs correction (6% steps) :		0	0	0	0				
Data Set B :									
- Used for tomo :		no	yes	no	no				
- Used for fluoroscopy :		no	no	no	no				
- CT add on :		no	no	no	no				
- Disable time override :		no	no	no	no				
- Tube power factor :		100 %	100 %	100 %	100 %				
- kV steps :		Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose eqiv. 1)				
- mAs steps :		25 % 1)	25 % 1)	25 % 1)	25 % 1)				
- mA steps :		25 % 1)	25 % 1)	25 % 1)	25 % 1)				
- time steps :		25 % 1)	25 % 1)	25 % 1)	25 % 1)				
- Density steps :		12 % 1)	12 % 1)	12 % 1)	12 %				
- Density correction (6% steps) :		0	0	0	0				
- Underexposure display :		yes	no	yes	yes				
- Tube overload protection :		on	on	on	on				

~~**Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :**~~		**Bucky / Tomo 1WA : Decade Bucky 1/2**	**WAX11**	**WAX12**	**~~Bucky / Tomo time~~**			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] ~~RGDV5~~ [ ] ~~RGDV6~~ [ ] ~~RGDV7~~ [ ] ~~RGDV8~~ [ ]	Tomo mode switch	enable	----	Tomo time 1 :	----	Tomo time 5:	----
		Bucky RGDV - switch related	RGDV1	----	Tomo time 2 :	----	Tomo time 6 :	----
		Bucky RGDV	none	----	Tomo time 3 :	----	Tomo time 7 :	----
		Bucky RGDV	none	----	Tomo time 4 :	----	Tomo time 8 :	----
		Tomo RGDV - switch related	RGDV2	----	Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

1) = has to be adjustet on site

[ ] = TDC

RGDV programming: example 6

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4512-983-05671_2Z-2_8_010

BuckyDIAGNOST TH any version with Bucky-Controller Generotor equipped with / without decade adapt. unit WA Aux. for MCS (only) = RGDV4 combined with free cassette ***Name :***	Bucky	Tomo	Bucky wall stand	Free cassette	MCS			
Data Set A : Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV4	RGDV6	RGDV7	RGDV8
- Room :	1	1	1	1	1			
- Tube :	1	1	1	1	1			
- Release circuit number :	1	1	1	1	1			
- Enable handswitch at generator desk :	yes	yes	yes	yes	yes			
- Syncmaster present :	yes	yes	yes	yes	yes			
- Exposure switch type :	double step	double step	double step	double step	double step			
- Bucky format density correction :	0	0	0	0	0			
- Cone density correction :	0	0	0	0	0			
- Dose measurement input :	EZ X21	none / [EZ X21]	EZ X31	none	EZ X22			
- Dose measurement sensor :	Bucky amplimat	Bucky amplimat	Bucky amplimat	(Bucky amplimat)	Bucky amplimat			
- Exposure series / Tomo movement :	no	no	no	no	no			
- Release delay :	enable	enable	enable	enable	enable			
- Mounted radiographical controller :	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost			
- Release circuit adaptation unit :	none	none	none	none	none			
- Mounted tomo extension :	none	none	none	none	none			
- Medium II format kV correction (dose equiv. steps) :	0	0	0	0	0			
- Medium II format density correction (6% steps) :	0	0	0	0	0			
- Medium II format mAs correction (6% steps) :	0	0	0	0	0			
- Small II format kV correction (dose equiv. steps) :	0	0	0	0	0			
- Small II format density correction (6% steps) :	0	0	0	0	0			
- Small II format mAs correction (6% steps) :	0	0	0	0	0			
Data Set B :								
- Used for tomo :	no	yes	no	no	no			
- Used for fluoroscopy :	no	no	no	no	no			
- CT add on :	no	no	no	no	no			
- Disable time override :	no	no	no	no	no			
- Tube power factor :	100 %	100 %	100 %	100 %	100 %			
- kV steps :	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)			
- mAs steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)	25 % 1)			
- mA steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)	25 % 1)			
- time steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)	25 % 1)			
- Density steps :	12 % 1)	12 % 1)	12 % 1)	12 %	12 % 1)			
- Density correction (6% steps) :	0	0	0	0	0			
- Underexposure display :	yes	yes	yes	yes	yes			
- Tube overload protection :	on	on	on	on	on			

~~**Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :**~~		~~**Bucky / Tomo 1WA : Decade Bucky 1/2**~~	~~**WAX11**~~	~~**WAX12**~~	~~**Bucky / Tomo time**~~			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] RGDV5 [ ] RGDV6 [ ] RGDV7 [ ] RGDV8 [ ]	Tomo mode switch	----	----	Tomo time 1 :	----	Tomo time 5:	----
		Bucky RGDV - switch related	----	----	Tomo time 2 :	----	Tomo time 6 :	----
		Bucky RGDV	----	----	Tomo time 3 :	----	Tomo time 7 :	----
		Bucky RGDV	----	----	Tomo time 4 :	----	Tomo time 8 :	----
		Tomo RGDV - switch related	----	----	Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

1) = has to be adjustet on site

[ ] = TDC

RGDV programming: example 8

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(01.0)

RGDV programming: example 9

2Z-2.9

BuckyDIAGNOST TH any version ***Name :*** ***Generotor equipped with / without decade adapt. unit WA*** ***Aux. for MCS (only) = any of RGDV5 ... 8***	Bucky	Tomo	Bucky wall stand	Free cassette				MCS
Data Set A : Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV5	RGDV6	RGDV7	RGDV8
- Room :	1	1	1	1				1
- Tube :	1	1	1	1				1
- Release circuit number :	1	1	1	1				1
- Enable handswitch at generator desk :	yes	yes	yes	yes				yes
- Syncmaster present :	yes	yes	yes	yes				no
- Exposure switch type :	double step	double step	double step	double step				double step
- Bucky format density correction :	0	0	0	0				0
- Cone density correction :	0	0	0	0				0
- Dose measurement input :	EZ X21	none / [EZ X21]	EZ X31	none				EZ X22
- Dose measurement sensor :	Bucky amplimat	Bucky amplimat	Bucky amplimat	(Bucky amplimat)				Bucky amplimat
- Exposure series / Tomo movement :	no	no	no	no				no
- Release delay :	enable	enable	enable	enable				enable
- Mounted radiographical controller :	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost				none
- Release circuit adaptation unit :	none	none	none	none				none
- Mounted tomo extension :	none	none	none	none				none
- Medium II format kV correction (dose equiv. steps) :	0	0	0	0				0
- Medium II format density correction (6% steps) :	0	0	0	0				0
- Medium II format mAs correction (6% steps) :	0	0	0	0				0
- Small II format kV correction (dose equiv. steps) :	0	0	0	0				0
- Small II format density correction (6% steps) :	0	0	0	0				0
- Small II format mAs correction (6% steps) :	0	0	0	0				0
Data Set B :								
- Used for tomo :	no	yes	no	no				no
- Used for fluoroscopy :	no	no	no	no				no
- CT add on :	no	no	no	no				no
- Disable time override :	no	no	no	no				no
- Tube power factor :	100 %	100 %	100 %	100 %				100 %
- kV steps :	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)				Dose equiv. 1)
- mAs steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				25 % 1)
- mA steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				25 % 1)
- time steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				25 % 1)
- Density steps :	12 % 1)	12 % 1)	12 % 1)	12 %				12 % 1)
- Density correction (6% steps) :	0	0	0	0				0
- Underexposure display :	yes	yes	yes	yes				yes
- Tube overload protection :	on	on	on	on				on

~~Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :~~		~~Bucky / Tomo 1WA : Decade Bucky 1/2~~	~~WAX11~~	~~WAX12~~	~~Bucky / Tomo time~~			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] ~~RGDV5 [ ] RGDV6 [ ] RGDV7 [ ]~~ RGDV8 [ ]	Tomo mode switch	----	----	Tomo time 1 :	----	Tomo time 5:	----
		Bucky RGDV - switch related	----	----	Tomo time 2 :	----	Tomo time 6 :	----
		Bucky RGDV	----	----	Tomo time 3 :	----	Tomo time 7 :	----
		Bucky RGDV	----	----	Tomo time 4 :	----	Tomo time 8 :	----
		Tomo RGDV - switch related	----	----	Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

1) = has to be adjustet on site

[ ] = TDC

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(01.0)

RGDV programming: example 10

2Z-2.10

BuckyDIAGNOST TH any version ***Name :*** ***Generotor equipped with / without decade adapt. unit WA*** ***Aux. for TraumaDiagnost (only) = any of RGDV5 ... 8*** ***Aux. RGDV1 ... 4 must not be used with a Bucky TH stystem via CAN***	Bucky	Tomo	Bucky wall stand	Free cassette				Trauma
Data Set A : Desk :	RGDV1	RGDV2	RGDV3	RGDV4	RGDV5	RGDV6	RGDV7	RGDV8
- Room :	1	1	1	1				1
- Tube :	1	1	1	1				2
- Release circuit number :	1	1	1	1				1
- Enable handswitch at generator desk :	yes	yes	yes	yes				yes
- Syncmaster present :	yes	yes	yes	yes				no
- Exposure switch type :	double step	double step	double step	double step				double step
- Bucky format density correction :	0	0	0	0				0
- Cone density correction :	0	0	0	0				0
- Dose measurement input :	EZ X21	none / [EZ X21]	EZ X31	none				EZ X22
- Dose measurement sensor :	Bucky amplimat	Bucky amplimat	Bucky amplimat	(Bucky amplimat)				Scopo amplimat
- Exposure series / Tomo movement :	no	no	no	no				no
- Release delay :	enable	enable	enable	enable				enable
- Mounted radiographical controller :	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost	Bucky contr. 1 / DigitalDiagnost				none
- Release circuit adaptation unit :	none	none	none	none				none
- Mounted tomo extension :	none	none	none	none				none
- Medium II format kV correction (dose equiv. steps) :	0	0	0	0				0
- Medium II format density correction (6% steps) :	0	0	0	0				0
- Medium II format mAs correction (6% steps) :	0	0	0	0				0
- Small II format kV correction (dose equiv. steps) :	0	0	0	0				0
- Small II format density correction (6% steps) :	0	0	0	0				0
- Small II format mAs correction (6% steps) :	0	0	0	0				0
Data Set B :								
- Used for tomo :	no	yes	no	no				no
- Used for fluoroscopy :	no	no	no	no				yes
- CT add on :	no	no	no	no				no
- Disable time override :	no	no	no	no				no
- Tube power factor :	100 %	100 %	100 %	100 %				100 %
- kV steps :	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)	Dose equiv. 1)				Dose equiv. 1)
- mAs steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				25 % 1)
- mA steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				25 % 1)
- time steps :	25 % 1)	25 % 1)	25 % 1)	25 % 1)				25 % 1)
- Density steps :	12 % 1)	12 % 1)	12 % 1)	12 %				12 % 1)
- Density correction (6% steps) :	0	0	0	0				0
- Underexposure display :	yes	yes	yes	yes				yes
- Tube overload protection :	on	on	on	on				on

~~Bucky / Scopo 1WB / Decade Bucky 1 (WBX11) :~~		~~Bucky / Tomo 1WA : Decade Bucky 1/2~~	~~WAX11~~	~~WAX12~~	~~Bucky / Tomo time~~			
Bucky RGDV :	RGDV1 [ ] RGDV2 [ ] RGDV3 [ ] RGDV4 [ ] RGDV5 [ ] RGDV6 [ ] RGDV7 [ ] RGDV8 [ ]	Tomo mode switch	----	----	Tomo time 1 :	----	Tomo time 5:	----
		Bucky RGDV - switch related	----	----	Tomo time 2 :	----	Tomo time 6 :	----
		Bucky RGDV	----	----	Tomo time 3 :	----	Tomo time 7 :	----
		Bucky RGDV	----	----	Tomo time 4 :	----	Tomo time 8 :	----
		Tomo RGDV - switch related	----	----	Time setting for input at WA X21:1 8			
For WBX11 : 9 --10 (ready) und 1--2 (format size correction contact)		*Tomo mode switch : X11:3 SL_XG_TO / Bucky RGDV : X11:1 Format + :10 Bucky ready / Tomo RGDV : X11:1 Format + :5 Tomo ready switch related X11:3 --> Bucky - Tomo remote switchover RGDVs*						

1) = has to be adjustet on site

[ ] = TDC

Character display on the control desk				Possible PC display (code 850)	Input at the PC
English	German	French	Spanish		
!	!	!	!	!	
#	#	£	£	#	
$	$	$	$	$	
%	%	%	%	%	
&	&	&	&	&	
’	’	’	’	’	
(	(	(	(	(	
)	)	)	)	)	
*	*	*	*	*	
+	+	+	+	+	
,	,	,	,	,	
-	-	-	-	-	
.	.	.	.	.	
/	/	/	/	/	
0	0	0	0	0	
1	1	1	1	1	
2	2	2	2	2	
3	3	3	3	3	
4	4	4	4	4	
5	5	5	5	5	
6	6	6	6	6	
7	7	7	7	7	
8	8	8	8	8	
9	9	9	9	9	
:	:	:	:	:	
;	;	;	;	;	
<	<	<	<	<	
=	=	=	=	=	
>	>	>	>	>	
?	?	?	?	?	
@	§	à	§	@	
A	A	A	A	A	
B	B	B	B	B	
C	C	C	C	C	
D	D	D	D	D	
E	E	E	E	E	
F	F	F	F	F	
G	G	G	G	G	
H	H	H	H	H	
I	I	I	I	I	
J	J	J	J	J	
K	K	K	K	K	
L	L	L	L	L	
M	M	M	M	M	
N	N	N	N	N	
O	O	O	O	O	
P	P	P	P	P	
Q	Q	Q	Q	Q	

Character display on the control desk				Possible PC display (code 850)	Input at the PC
English	German	French	Spanish		
R	R	R	R	R	
S	S	S	S	S	
T	T	T	T	T	
U	U	U	U	U	
V	V	V	V	V	
W	W	W	W	W	
X	X	X	X	X	
Y	Y	Y	Y	Y	
Z	Z	Z	Z	Z	
[	Ä	.	¡	[	
\	Ö	ç	Ñ	\	
]	Ü	§	¿	]	
^	^	^	^	^	
_	_	_	_	_	
’	’	’	’	’	
a	a	a	a	a	
b	b	b	b	b	
c	c	c	c	c	
d	d	d	d	d	
e	e	e	e	e	
f	f	f	f	f	
g	g	g	g	g	
h	h	h	h	h	
i	i	i	i	i	
j	j	j	j	j	
k	k	k	k	k	
l	l	l	l	l	
m	m	m	m	m	
n	n	n	n	n	
o	o	o	o	o	
p	p	p	p	p	
q	q	q	q	q	
r	r	r	r	r	
s	s	s	s	s	
t	t	t	t	t	
u	u	u	u	u	
v	v	v	v	v	
w	w	w	w	w	
x	x	x	x	x	
y	y	y	y	y	
z	z	z	z	z	
{	ä	é	▪	{	Alt +123
¦	ö	ù	ñ	¦	Alt +124
}	ü	é	Ç	}	Alt +125
~	ß	-	~	~	Alt +126
				Δ	Alt +127
◢	◢	◢	◢	á	Alt +160
■	■	■	■	í	Alt +161
⊢	⊢	⊢	⊢	ó	Alt +162

Character display on the control desk				Possible PC display (code 850)	Input at the PC
English	German	French	Spanish		
£	£	£	£	ú	Alt +163
▪	▪	▪	▪	ñ	Alt +164
§	§	§	§	º	Alt +167
ⅢⅢ	ⅢⅢ	ⅢⅢ	ⅢⅢ	¿	Alt +168
‖	‖	‖	‖	®	Alt +169
≣	≣	≣	≣	¬	Alt +170
≡	≡	≡	≡	½	Alt +171
					Alt +172
					Alt +173
					Alt +174
					Alt +175
°	°	°	°	▒	Alt +176
±	±	±	±	▒	Alt +177
²	²	²	²	▉	Alt +178
À	À	À	À	└	Alt +192
Á	Á	Á	Á	┴	Alt +193
Â	Â	Â	Â	┬	Alt +194
Ã	Ã	Ã	Ã	├	Alt +195
Ä	Ä	Ä	Ä	─	Alt +196
Å	Å	Å	Å	┼	Alt +197
Æ	Æ	Æ	Æ	ã	Alt +198
Ç	Ç	Ç	Ç	Ã	Alt +199
È	È	È	È	╚	Alt +200
É	É	É	É	╔	Alt +201
Ê	Ê	Ê	Ê	╩	Alt +202
Ë	Ë	Ë	Ë	╦	Alt +203
Ì	Ì	Ì	Ì	╠	Alt +204
Í	Í	Í	Í	═	Alt +205
Î	Î	Î	Î	╬	Alt +206
Ï	Ï	Ï	Ï	¤	Alt +207
				ð	Alt +208
Ñ	Ñ	Ñ	Ñ	Ð	Alt +209
Ò	Ò	Ò	Ò	Ê	Alt +210
Ó	Ó	Ó	Ó	Ë	Alt +211
Ô	Ô	Ô	Ô	È	Alt +212
Õ	Õ	Õ	Õ	ı	Alt +213
Ö	Ö	Ö	Ö	í	Alt +214
				î	Alt +215
Ø	Ø	Ø	Ø	ï	Alt +216
Ù	Ù	Ù	Ù	┘	Alt +217
Ú	Ú	Ú	Ú	┌	Alt +218
Û	Û	Û	Û	▌	Alt +219
Ü	Ü	Ü	Ü	▄	Alt +220
Ý	Ý	Ý	Ý	¦	Alt +221
				ì	Alt +222
ß	ß	ß	ß	▀	Alt +223
à	à	à	à	Ó	Alt +224
á	á	á	á	β	Alt +225
â	â	â	â	Ô	Alt +226

Character display on the control desk				Possible PC display (code 850)	Input at the PC
English	German	French	Spanish		
ã	ã	ã	ã	Ò	Alt +227
ä	ä	ä	ä	õ	Alt +228
å	å	å	å	Õ	Alt +229
æ	æ	æ	æ	µ	Alt +230
ç	ç	ç	ç	Þ	Alt +231
è	è	è	è	þ	Alt +232
é	é	é	é	Ú	Alt +233
ê	ê	ê	ê	Û	Alt +234
ë	ë	ë	ë	Ù	Alt +235
ì	ì	ì	ì	ý	Alt +236
í	í	í	í	Ý	Alt +237
î	î	î	î	▪	Alt +238
ï	ï	ï	ï	’	Alt +239
				▪	Alt +240
ñ	ñ	ñ	ñ	±	Alt +241
ò	ò	ò	ò	=	Alt +242
ó	ó	ó	ó	¾	Alt +243
ô	ô	ô	ô	¶	Alt +244
õ	õ	õ	õ	§	Alt +245
ö	ö	ö	ö	÷	Alt +246
				¸	Alt +247
ø	ø	ø	ø	°	Alt +248
ù	ù	ù	ù	¨	Alt +249
ú	ú	ú	ú	·	Alt +250
û	û	û	û	¦	Alt +251
ü	ü	ü	ü	³	Alt +252
ý	ý	ý	ý	²	Alt +253
				▪	Alt +254
					Alt +255

4512 983 05721

(97.0)

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		Chamber 1	Chamber 2	Chamber 3	Chamber 4	Chamber 5
Data Set 1	Film:	.....	.....	.....	.....	.....
	Screen:	.....	.....	.....	.....	.....
	Chamber:	.....	.....	.....	.....	.....
	Cassette:	.....	.....	.....	.....	.....
	Sys.corr.:	.....	.....	.....	.....	.....
	Corr. factor:	.....	.....	.....	.....	.....
Data Set 2	Film:	.....	.....	.....	.....	.....
	Screen:	.....	.....	.....	.....	.....
	Chamber:	.....	.....	.....	.....	.....
	Cassette:	.....	.....	.....	.....	.....
	Sys.corr.:	.....	.....	.....	.....	.....
	Corr. factor:	.....	.....	.....	.....	.....
Data Set 3	Film:	.....	.....	.....	.....	.....
	Screen:	.....	.....	.....	.....	.....
	Chamber:	.....	.....	.....	.....	.....
	Cassette:	.....	.....	.....	.....	.....
	Sys.corr.:	.....	.....	.....	.....	.....
	Corr. factor:	.....	.....	.....	.....	.....
Data Set 4	Film:	.....	.....	.....	.....	.....
	Screen:	.....	.....	.....	.....	.....
	Chamber:	.....	.....	.....	.....	.....
	Cassette:	.....	.....	.....	.....	.....
	Sys.corr.:	.....	.....	.....	.....	.....
	Corr. factor:	.....	.....	.....	.....	.....
Data Set 5	Film:	.....	.....	.....	.....	.....
	Screen:	.....	.....	.....	.....	.....
	Chamber:	.....	.....	.....	.....	.....
	Cassette:	.....	.....	.....	.....	.....
	Sys.corr.:	.....	.....	.....	.....	.....
	Corr. factor:	.....	.....	.....	.....	.....

A4 02-02-18 We
4512-983-05771_2Z-4_970

Data sets of chambers

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Device interface 1

RGDV key 1 :	
RGDV key 2 :	
RGDV	
APR 1	APR 2 .....
APR 3	APR 4 .....
APR 5	APR 6 .....

RGDV key 1 :	
RGDV key 2 :	
RGDV	
APR 1	APR 2 .....
APR 3	APR 4 .....
APR 5	APR 6 .....

RGDV key 1 :	
RGDV key 2 :	
RGDV	
APR 1	APR 2 .....
APR 3	APR 4 .....
APR 5	APR 6 .....

RGDV key 1 :	
RGDV key 2 :	
RGDV	
APR 1	APR 2 .....
APR 3	APR 4 .....
APR 5	APR 6 .....

Device interface 2

RGDV	
APR 1	APR 2 .....
APR 3	APR 4 .....
APR 5	APR 6 .....
APR 7	APR 8 .....

RGDV	
APR 1	APR 2 .....
APR 3	APR 4 .....
APR 5	APR 6 .....
APR 7	APR 8 .....

RGDV	
APR 1	APR 2 .....
APR 3	APR 4 .....
APR 5	APR 6 .....
APR 7	APR 8 .....

RGDV	
APR 1	APR 2 .....
APR 3	APR 4 .....
APR 5	APR 6 .....
APR 7	APR 8 .....

Device interface 3

RGDV key 1 :	
RGDV key 2 :	
RGDV	
APR 1	APR 2 .....
APR 3	APR 4 .....
APR 5	APR 6 .....
APR 7	APR 8 .....

RGDV key 1 :	
RGDV key 2 :	
RGDV	
APR 1	APR 2 .....
APR 3	APR 4 .....
APR 5	APR 6 .....
APR 7	APR 8 .....

RGDV key 1 :	
RGDV key 2 :	
RGDV	
APR 1	APR 2 .....
APR 3	APR 4 .....
APR 5	APR 6 .....
APR 7	APR 8 .....

RGDV key 1 :	
RGDV key 2 :	
RGDV	
APR 1	APR 2 .....
APR 3	APR 4 .....
APR 5	APR 6 .....
APR 7	APR 8 .....

A4 02-02-18 We
4512-983-05731_2Z-5_970

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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06011

4-1	(04.1)		
2Z-10	(a/04.0)	A3/A4	4512 983 02831
2Z-10	(a/02.0)	A3/A3	4512 983 05701 (R/F)
2Z-10	(a/02.0)	A3/A3	4512 983 05831 (RAD)

Labeling

1. Labels

- Check the labelling according to the respective generator type.

See drawing 2Z-10.

All lables become visible by swiveling out the label bracket simply by hand and without any tool. The bracket is located at the top left corner of the front side of the cabinet, visibly marked by an ”i” (for information) and text ”Certified Component Labels Here”. If the label bracket is swiveled 90 degrees to the right the following labels appear at its bottom side:

- X-ray control:
  - type designation
  - serial No.
  - name and address of manufacturer
  - DHHS certification statement (if necessary)
  - date of manufacture
- X-ray H.V. generator:
  - type designation
  - serial No.
  - name and address of manufacturer
  - DHHS certification statement (if necessary)
  - date of manufacture
- Technical data label with UL / CSA classification (if necessary)

■

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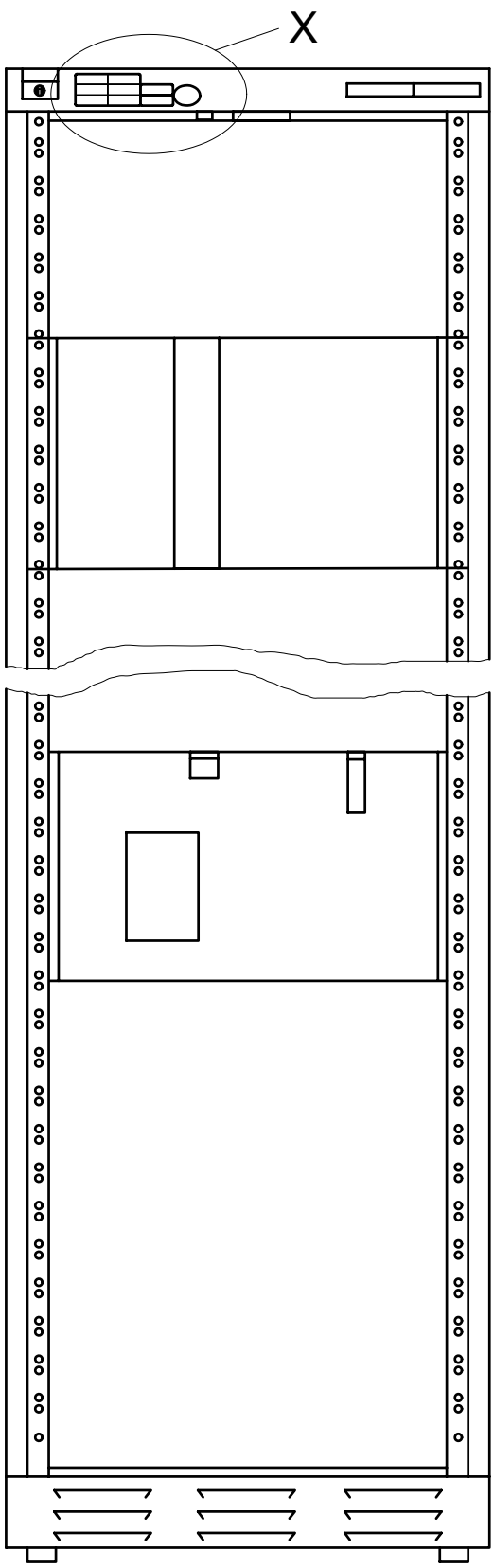
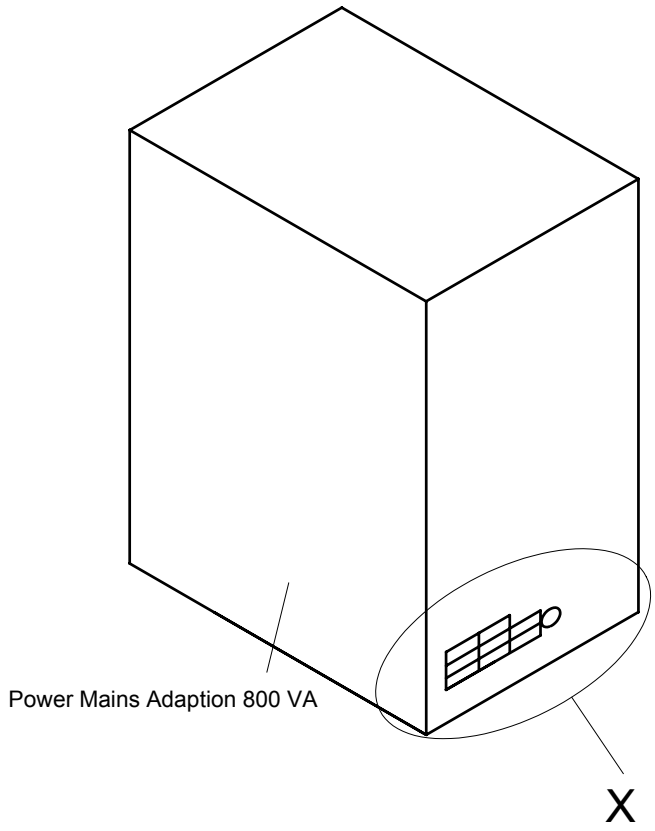
OPTIMUS 50/65/80



OPTIMUS 30/40 single phase



X

Logo	Address	
Type No.	Electr. data	CE
IEC 60601-1	IEC 60601-2-32	UL / CSA

A3/A4 04-05-28 Schr.

OPTIMUS
Labelling

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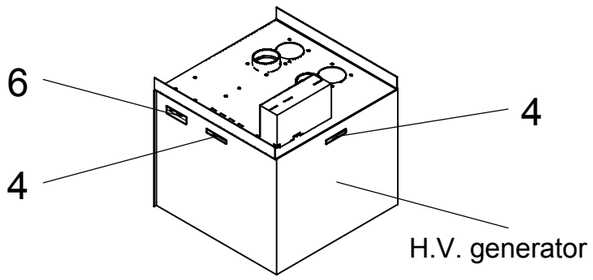

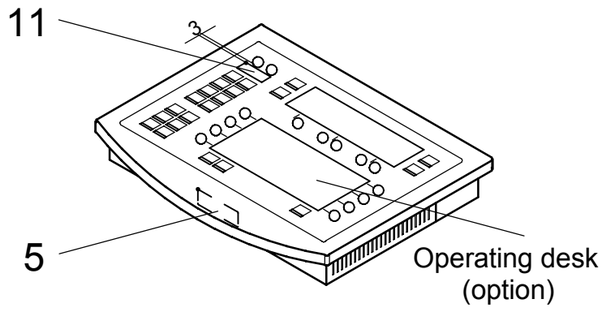

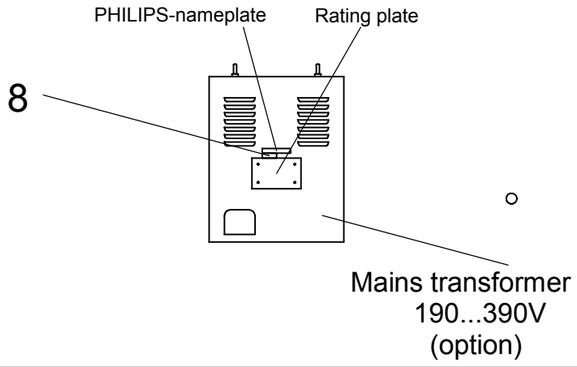

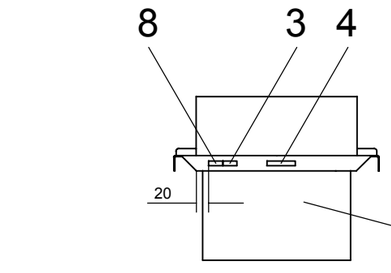

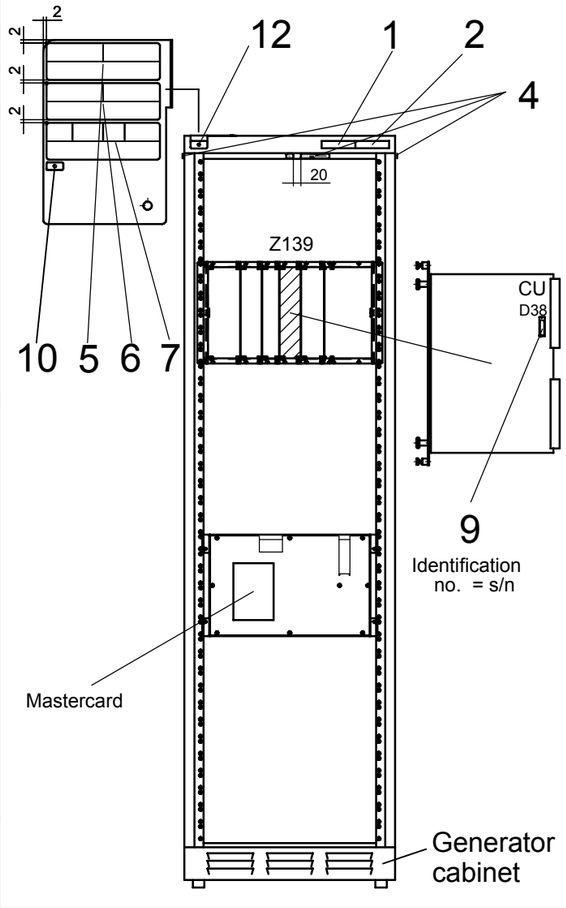

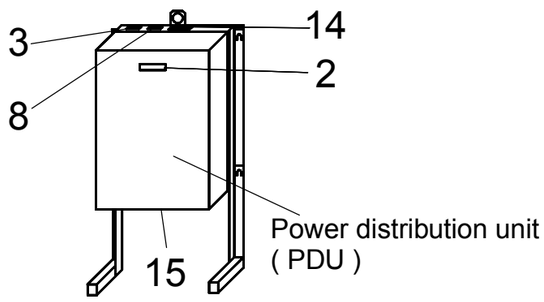

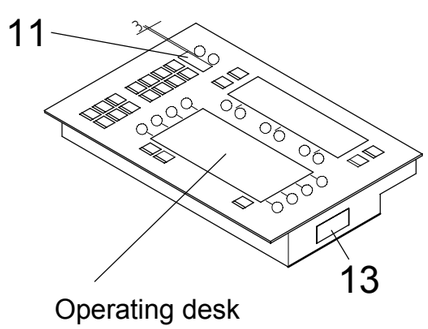

1 OPTIMUS 50

1 OPTIMUS 65

1 OPTIMUS 80

2 PHILIPS
MADE IN GERMANY

3
Philips Medical Systems
DMC GmbH
Röntgenstrasse 24
D-22335 Hamburg / Germany

4 CAUTION
HAZARD FOR LIVE AND /OR MOVING PARTS.
ATTENTION WHEN SERVICING ENERGIZED EQUIPMENT.
OBSERVE THE SERVICE-MANUAL.

7 50 kW

50 kW	3~50/60Hz 400V 480V		10A 8A	145A 120A
- X-RAY EQUIPMENT - CLASSIFIED BY UNDERWRITERS LABORATORIES INC.© WITH RESPECT TO ELECTRICAL FIRE, SHOCK AND MECHANICAL HAZARDS ONLY. 641B				

UL CSA

7 65 kW

65kW	3~50/60Hz 400V 480V		10A 8A	190A 160A
- X-RAY EQUIPMENT - CLASSIFIED BY UNDERWRITERS LABORATORIES INC.© WITH RESPECT TO ELECTRICAL FIRE, SHOCK AND MECHANICAL HAZARDS ONLY. 641B				

UL CSA

7 80 kW

80kW	3~50/60Hz 400V 480V		10A 8A	230A 190A
- X-RAY EQUIPMENT - CLASSIFIED BY UNDERWRITERS LABORATORIES INC.© WITH RESPECT TO ELECTRICAL FIRE, SHOCK AND MECHANICAL HAZARDS ONLY. 641B				

UL CSA

5

- X-RAY CONTROL - type 9890 000 0200x s/n xx xxxx OPTIMUS 50/65/80	Philips Medical Systems DMC GmbH Röntgenstr. 24 D-22335 Hamburg / Germany

CERTIFICATION This product complies with the Performance Standard under the Radiation Control for Health and Safety Act of 1968, applicable at date of manufacture.
Manufactured: MONAT, JAHR

6

- X-RAY HV GENERATOR - type 9890 000 xxxxx s/n xx xxxx OPTIMUS	Philips Medical Systems DMC GmbH Röntgenstr. 24 D-22335 Hamburg / Germany

CERTIFICATION This product complies with the Performance Standard under the Radiation Control for Health and Safety Act of 1968, applicable at date of manufacture.
Manufactured: MONAT, JAHR

13

- X-RAY CONTROL - type 9890 000 xxxxx s/n xx xxxx OPTIMUS	Philips Medical Systems DMC GmbH Röntgenstr. 24 D-22335 Hamburg / Germany

CERTIFICATION This product complies with the Performance Standard under the Radiation Control for Health and Safety Act of 1968, applicable at date of manufacture.
Manufactured: MONAT, JAHR

8
type Produktname
s/n Fabr. Nr.
code Code Nr.

9 SN.

10 CE 0123

11 WARNING:
THIS X-RAY UNIT MAY BE DANGEROUS TO PATIENT AND OPERATOR UNLESS SAFE EXPOSURE FACTORS AND OPERATING INSTRUCTIONS ARE OBSERVED.

12 Certified Component Labels Here

14

	3~50/60 Hz 400V 11A 480V 9A		
c UL us			

15 4512 104 7073.

A3/A3 02-06-19 Schr.

Labelling

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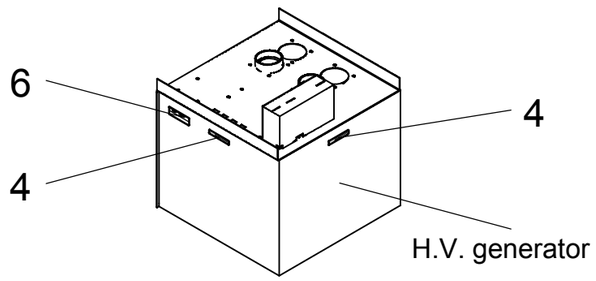

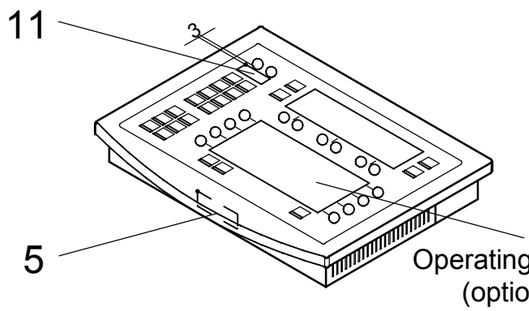

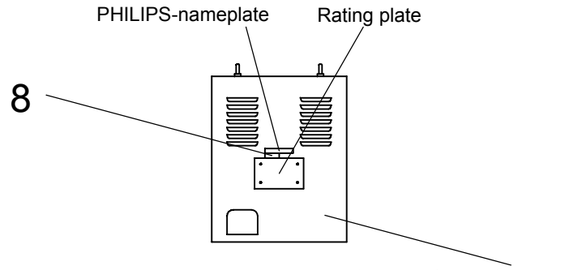

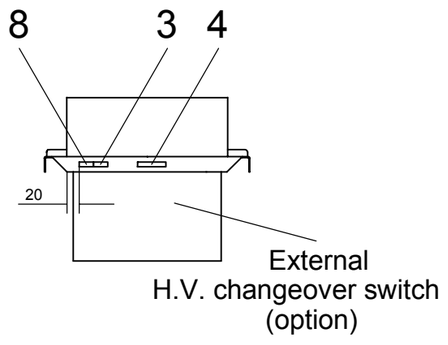

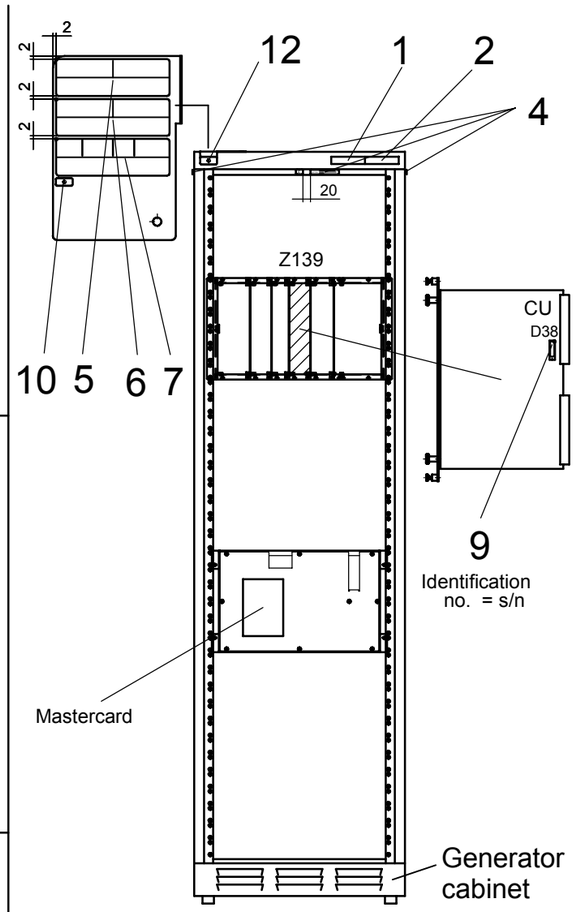

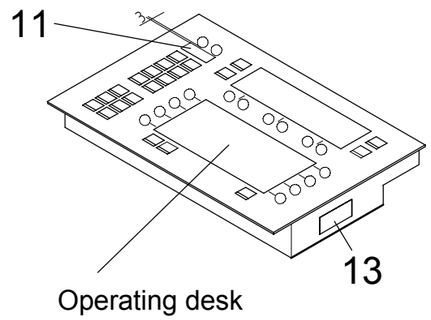

1 OPTIMUS 50

1 OPTIMUS 65

1 OPTIMUS 80

2 PHILIPS
MADE IN GERMANY

3
Philips Medical Systems
DMC GmbH
Röntgenstrasse 24
D-22335 Hamburg / Germany

4 CAUTION
HAZARD FOR LIVE AND /OR MOVING PARTS.
ATTENTION WHEN SERVICING ENERGIZED EQUIPMENT.
OBSERVE THE SERVICE-MANUAL.

7 50 kW

50 kW	3~50/60Hz 400V 480V		145A 120A

- X-RAY EQUIPMENT -
CLASSIFIED BY UNDERWRITERS LABORATORIES INC.©
WITH RESPECT TO ELECTRICAL FIRE,
SHOCK AND MECHANICAL HAZARDS ONLY. 641B
UL CSA

7 65 kW

65kW	3~50/60Hz 400V 480V		190A 160A

- X-RAY EQUIPMENT -
CLASSIFIED BY UNDERWRITERS LABORATORIES INC.©
WITH RESPECT TO ELECTRICAL FIRE,
SHOCK AND MECHANICAL HAZARDS ONLY. 641B
UL CSA

7 80 kW

80kW	3~50/60Hz 400V 480V		230A 190A

- X-RAY EQUIPMENT -
CLASSIFIED BY UNDERWRITERS LABORATORIES INC.©
WITH RESPECT TO ELECTRICAL FIRE,
SHOCK AND MECHANICAL HAZARDS ONLY. 641B
UL CSA

5

- X-RAY CONTROL - type 9890 000 0200x s/n xx xxxx OPTIMUS 50/65/80	Philips Medical Systems DMC GmbH Röntgenstr. 24 D-22335 Hamburg / Germany

CERTIFICATION This product complies with the Performance Standard under the Radiation Control for Health and Safety Act of 1968, applicable at date of manufacture.
Manufactured: MONAT, JAHR

6

- X-RAY HV GENERATOR - type 9890 000 xxxxx s/n xx xxxx OPTIMUS	Philips Medical Systems DMC GmbH Röntgenstr. 24 D-22335 Hamburg / Germany

CERTIFICATION This product complies with the Performance Standard under the Radiation Control for Health and Safety Act of 1968, applicable at date of manufacture.
Manufactured: MONAT, JAHR

13

- X-RAY CONTROL - type 9890 000 xxxxx s/n xx xxxx OPTIMUS	Philips Medical Systems DMC GmbH Röntgenstr. 24 D-22335 Hamburg / Germany

CERTIFICATION This product complies with the Performance Standard under the Radiation Control for Health and Safety Act of 1968, applicable at date of manufacture.
Manufactured: MONAT, JAHR

8
type Produktname
s/n Fabr. Nr.
code Code Nr.

9 SN.

10 CE 0123

11 WARNING:
THIS X-RAY UNIT MAY BE DANGEROUS TO PATIENT AND OPERATOR UNLESS SAFE EXPOSURE FACTORS AND OPERATING INSTRUCTIONS ARE OBSERVED.

12 Certified Component Labels Here

14

	3~50/60 Hz 400V 11A 480V 9A		

c UL us

15 4512 104 7073.

A3/A3 02-06-20 Schr.

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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06021

4-1 (02.0)

Final installation work

1. Final installation work

- Mount the side panels of the generator cabinet.
- Take care that all cables inside the wall junction box are routed in **closed** loops without any kinks. Push the generator cabinet against the wall.

WARNING

Block the two front wheels of the cabinet with the locking screws to guarantee that unauthorized persons cannot accidentally touch parts of the generator which might be dangerous.

- If necessary, level the cabinet with the locking screws.
- Mount the front cover of the generator.

■

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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06381

4-1...4-2 (02.0)

Switch On the System

Contents

1. Switch ON the System 4-2

1.1 Ready 1 / ready 2 4-2

2. Check the following LEDs 4-2

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1. Switch ON the System

1.1. Ready 1 / ready 2

- Switch the system ON.

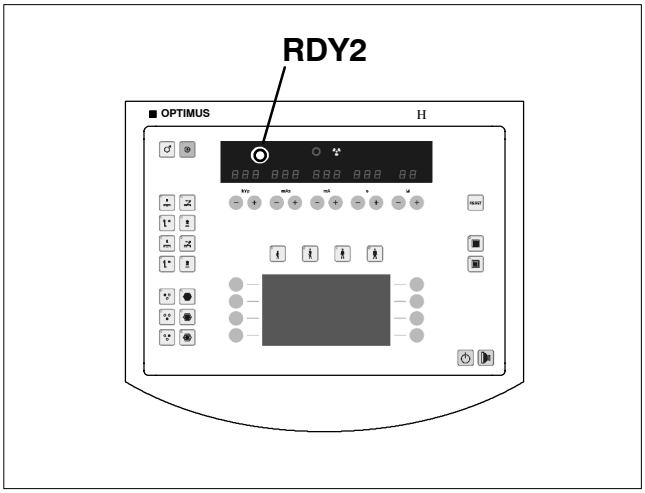
The self test procedure of the control desk will go while

- Service Mode Self Test = 30 seconds.
- Normal Mode = 45 seconds.

Note

Control Desk

- *Ready condition will be not displayed = no green light for ready 1*
- *After prep = anode is accelerated, the ready 2 will be displayed*



2. Check the following LEDs

LEDs are displaying the ready condition:

PCB	LED	Colour	Function
3A1 HT Controller	DS1	gn	Slows to steady flash 1Hz
3A3 Filiament circuit	DS1 / DS2	gn	Both LEDs are ON
3A2 Interface circuit	DS1	gn	Generator Power ON
1A ATP Console	DS1	red	Watchdog LED = ON, Correct timing with generator
	DS2	red	Flash 1Hz while communication
Module6	6NL1 Power lamp	gn	Power lamp is ON for supply ON PMA is present

■

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Tube Adjustment

Contents

1. Tube adjustment 4-2

1.1 Tube conditioning 4-2

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1. Tube adjustment

⚠ WARNING

Radiation is released during the tube conditioning.

1.1. Tube conditioning

This procedure must be performed for each new installed tube. Specially if the storage time between factory and field exceed 4 weeks. The interval times between exposures must be adhered to and monitored with a watch. The break-in of the tube only takes place on large focus.

- RGDV 4 / Free exposure
- Select large focus.
- Release exposures according to the following table.

  The exposure run must always be made at one kV level without any repeated start-up of the tube, i.e. the PREP button must always remain pressed during the run.

Number of EXPs	kV	mAs	Pause [s]
5	81	125	1
			30
3	102	125	1
			30
2	109	125	1
			60
2	125	125	1
			120

In the event of electrical interference the process must be continued after an interval of 5 minutes, starting at the lower kV level.

■

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LIST OF PAGES AND MODULES MODULE CODE NUMBER: 4512-983-06401

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2Z-10	(04.0)	A3	4512 983 06201

Final installation work

Contents

1. APR Programmings 4-2
2. AEC and Adjustment 4-2
3. Acceptance Test 4-2
4. Final Work and Handing Over 4-2

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1. APR Programmings

- See manual of APR.

2. AEC and Adjustment

- See manual of AEC
- See manual of Adjustment

3. Acceptance Test

- See manual of National Regulation

4. Final Work and Handing Over

- Fit all covers to:
  - PMA 800
  - Generator
  - bucky DIAGNOST TS
  - bucky DIAGNOST VE (if established)
  - control desk
- Clean covers.
- Check the labeling (see drawing 2Z-10).
- Hand over the system to the customer.
- File in the documentation at side.

■

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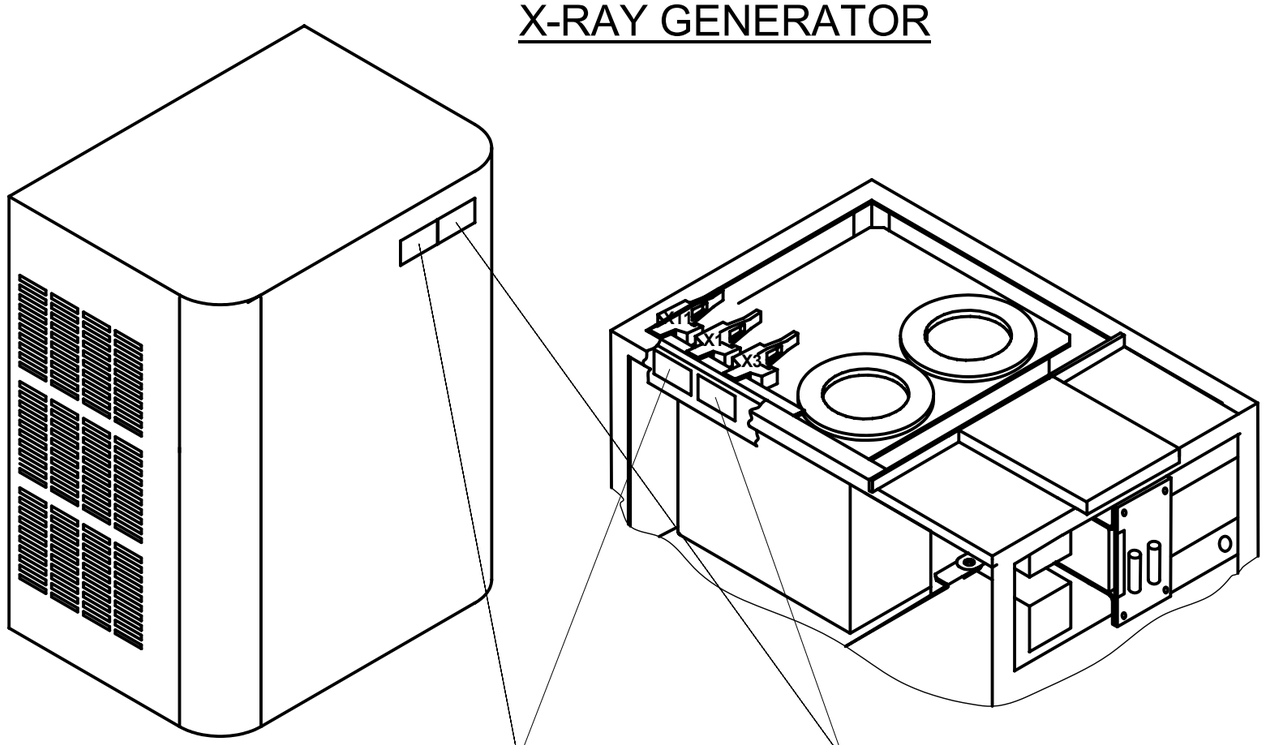
X-RAY GENERATOR



INTERNA labelling
on generator cabinet

PHILIPS Philips Medical Systems
DMC GmbH
Röntgenstraße 24
D-22335 Hamburg/Germany

X-RAY GENERATOR
type 9890 010 81981
s/n G _ _ _ _ _
Family PEI 9890 010 82591

Made by SEDECAL

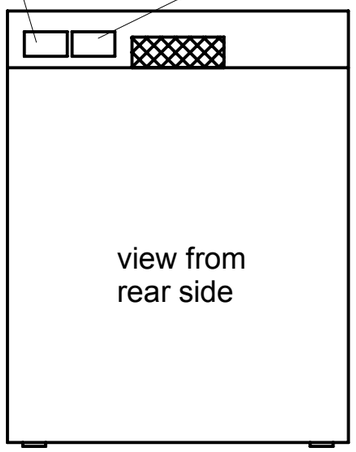
230V ~ 50/60Hz 140A

Class I - TYPE B
IEC 60601-1

Associated equipment
IEC 60601-2-32:1994

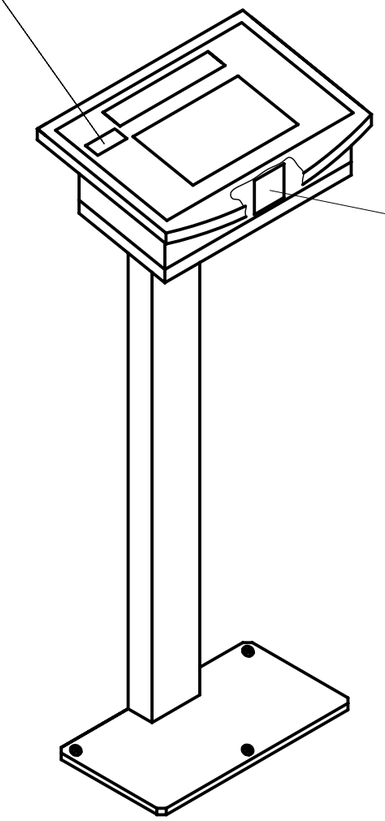
CERTIFICATION This product complies with the Performance Standard under the Radiation Control for Health and Safety Act of 1968, applicable at date of manufacture. Manufactured: June 2001

C UL US CLASSIFIED
- MEDICAL ELECTRICAL EQUIPMENT -
WITH RESPECT TO ELECTRIC SHOCK
FIRE, AND MECHANICAL HAZARDS
ONLY IN ACCORDANCE
WITH UL 60601-1,
CAN/CSA C22.2 NO.601.1
<8D20>



X-RAY CONTROL

WARNING:
THIS X-RAY UNIT MAY BE DANGEROUS
TO PATIENT AND OPERATOR UNLESS SAFE
EXPOSURE FACTORS AND OPERATING
INSTRUCTIONS ARE OBSERVED.



PHILIPS Philips Medical Systems
DMC GmbH
Röntgenstraße 24
D-22335 Hamburg/Germany

X-RAY CONTROL
type 4512 201 0081.
s/n C _ _ _ _ _
Family PEI 9890 010 8259.

Made by SEDECAL

CERTIFICATION This product complies with the Performance Standard under the Radiation Control for Health and Safety Act of 1968, applicable at date of manufacture. Manufactured: June 2001

A3 04-01-14 Schr.

OPTIMUS 30 Single phase
Labelling

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